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STOVE AND GREENHOUSE ORNAMENTAL-LEAVED
PLANTS.



CENTRE VIEW OF A CONSERVATORY, WITH ORNAMENT

Dimensions 100



PAVED PLANTS, AT THE VICTORIA NURSERY.

0 feet.

CHOICE
STOVE AND GREENHOUSE
ORNAMENTAL-LEAVED
PLANTS,

COMPRISING

DESCRIPTIONS OF UPWARDS OF EIGHT HUNDRED SPECIES
AND VARIETIES,

ACCOMPANIED BY

INSTRUCTIONS FOR THEIR CULTIVATION AND MODE OF MANAGEMENT,

With Illustrations.

BY

BENJAMIN SAMUEL WILLIAMS, F.R.H.S.,

Victoria and Paradise Nurseries, Upper Holloway, London, N.;

AUTHOR OF "THE ORCHID-GROWER'S MANUAL," "HINTS ON THE CULTIVATION OF FERNS,"
"SELECT FERNS AND LYCOPODS," "CHOICE STOVE AND
GREENHOUSE FLOWERING PLANTS," ETC., ETC.



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PREFACE.

THE large circulation which my little book entitled "Choice Stove and Greenhouse Flowering Plants" ^{July} has met with, encourages me to hope, that many ⁵⁷⁻ persons have found it useful to them in the course of their gardening pursuits.

In laying the companion volume—devoted entirely to Stove and Greenhouse Plants with Ornamental Leaves—before the public, I am not without hope, that while redeeming a promise made in a former work, I may, at the same time, be affording equally useful information to a numerous circle of readers.

In thus making especial reference to plants with ornamental leaves, it should be clearly understood, that I am quite prepared to admit that the leaves of every plant are full of beauty. There are, however, degrees of beauty; and while it is not reasonable to

suppose that any one cultivator can find sufficient accommodation for all the choice Exotics which are to be found in European gardens, it is quite reasonable to conclude that from want of space he would be compelled to make a selection, retaining only those which most commend themselves to his admiration, either on account of their bold and striking or distinct character, or from their delicacy and beauty. To assist the Horticulturist in his efforts in this direction, has been my chief aim in penning the pages of "Choice Stove and Greenhouse Ornamental-leaved Plants."

The woodcuts are partly original, and partly derived from friends; several of them have appeared in the *Gardeners' Chronicle*, in the *Florist and Pomologist*, and in the *Gardeners' Magazine*. To the Editors of these periodicals, I beg to tender my best thanks for the use of the blocks. I trust the success of this book will be sufficient to enable me to illustrate more largely in another edition.

B. S. WILLIAMS,

VICTORIA AND PARADISE NURSERIES,
UPPER HOLLOWAY, LONDON, N.

ORNAMENTAL FOLIAGE PLANTS.

INTRODUCTION.

HE rapid strides which the science of horticulture has made during the past few years, affords ample proof that our national taste is becoming more elevated and refined. Amateur plant growers have everywhere largely increased, and the collections of plants they cultivate is a proof that their conception of the beautiful is not confined to brilliant coloured flowers alone, but that they are able to appreciate grace and elegance in the form and markings of the leaves, independent of bloom, which has been for so many years the sole aim of the horticulturist, who looked forward to the development of these, in many instances, short-lived flowers as the sole reward of a whole season's labour. Now, however, we live in happier times, and derive a greater share of pleasure from our plants, because we grow and prize many which have beautifully variegated or otherwise richly ornamented leaves, and which begin to display their charms soon after germination. We wish to be per-

fectly understood in using the term "Ornamental-foliaged Plants," being fully aware that to those whose inclinations lead them into close intercourse with nature, everything is beautiful, and we have therefore prefixed the word "choice" to the title, and confine ourselves to the most strikingly beautiful and elegant-leaved kinds. How it was that we were so long learning to love these highly ornamental plants, it is difficult to say; but we are becoming thoroughly alive now to the noble and massive beauty displayed by some, to the graceful and elegant outlines of others, and to the richness and singularity in the colours and markings of the leaves of many more. Let us pause, however, and state distinctly, that great as our love may be for Ornamental-leaved Plants, we do not wish to exalt them, to the annihilation of the Ornamental-flowering Plants; for although the beautiful-leaved plants are exceedingly ornamental and gay when grouped together by themselves, we are fully persuaded that a judicious selection from both classes, according to the space at disposal, is the surest means of producing a gay and cheerful effect throughout the entire year.

What a blank it would make in our stoves and conservatories, were we to be suddenly deprived of our elegant Ferns, noble Palms, highly coloured *Dracænas*, massive *Agaves*, and graceful *Cordylines*, not to mention such plants as *Marantas*, *Dieffenbachias*, *Anthuriums*, *Alocasias*, and a host of other highly coloured and elegant plants. The older plant collectors were continually reminding us of the richly painted foliage they had met with in the tropics, but which they had never sent home, because no one ever thought of growing a plant except for the flowers it produced; and they were constantly urging upon horticulturists at home the great beauty

and highly decorative qualities of such as these, until at last the barrier was broken down, and with most beneficial results.

The cultivation of Ornamental-leaved Plants is much easier than that of plants grown entirely for the beauty of their flowers. This will be readily understood on a moment's reflection. To produce plants profusely adorned with flowers, close attention is required in resting, in shifting, and starting into growth at the proper season, and other matters of importance, all which is fully explained in the volume devoted entirely to the Ornamental-flowering Plants; but the plants now under consideration have to be treated upon quite a different principle, for as their beauty is to be sought in their foliage, the object should be to make them grow as vigorous as possible from the earliest stages, so that their characters may be seen at an early period of their existence, and those kinds which are not deciduous require to be kept in a growing state nearly the whole year, which differs materially from the treatment necessary for most plants required to produce a large crop of flowers. The deciduous or annual-leaved kinds, such as Caladiums, give very little trouble, but yield an abundance of their charming leaves provided an ample supply of water and moderate heat be maintained. The details of cultivation will, however, follow in its proper sequence, and therefore need not be further referred to here. Let us rather address ourselves to dispel the too prevalent idea, that the class of plants to which these pages are devoted require a great amount of heat. This may indeed be true in regard to most of the plants from the low grounds of the islands in the Indian Archipelago, and also from most other low countries within the tropics, and that a great many plants

of this class require ordinary stove heat we do not attempt to deny, but rather add, they will not exist without it; but between these is an immense quantity of grand "Foliage" Plants, which have for a number of years been looked upon as purely stove plants, but which we now find not only thrive well in the greenhouse and conservatory, but actually grow in the open air during the summer months. Nor is this any matter for astonishment, when we reflect that even "Palms," which we usually associate in our minds with great heat, are said to exist in abundance in the forest-clad slopes of the Andes, at some 7,000 and 8,000 feet altitude, and the same may be said of many species from the Himalayas. With these are found many plants which would be beautiful ornaments to our cool houses, if their natural positions were only more often borne in mind by the cultivator. It cannot be too strongly impressed upon the attention of collectors, that an account of the position, the altitude, and natural surroundings of every plant they gather, is of the greatest assistance to the practical man at home, and that through want of such knowledge many valuable and beautiful plants have been lost to cultivation, after having been introduced in a living state to this country.

Besides the Indian and tropical American plants, we have moreover those of Australia, New Zealand, and the Cape of Good Hope, all of which countries supply us with an immense quantity of Ornamental-leaved Plants, and every year only reveals to us the fact that richer treasures are yet in store for whoever searches for them.

REMARKS UPON PLANT HOUSES.

N the volume devoted to Flowering Plants, we have already described the houses which in our estimation are best adapted for the cultivation of those plants. The same remarks will apply with equal force in the case of plants grown for their foliage, but as some of the readers of the present volume may not be in possession of the book above referred to, it will be advisable to repeat them here.

There are many forms of houses which may be employed successfully for the growth of the plants which we have now under consideration, such as span-roofs, half-spans, curvilinear, and lean-to houses, but the span-roof is undoubtedly the best kind of house, as it affords the plants more light and air, and at the same time may be made to form an ornament in a garden where no other style of house could be tolerated.

By the above remarks, we do not mean to infer that good plants cannot be grown in any other class of house, because the daily experience of hundreds of amateurs and professional gardeners would flatly contradict such an assertion; but in offering advice, we deem it best to proffer such as our experience points out to be the very best and that the span-roof is the most to be preferred in houses devoted to plant growing, none will attempt to deny. On the other hand, half-spans and lean-to houses are very useful structures, and handsome specimens can also be grown in them, extra care being necessary in turning the plants round to the light in order to prevent the growths all drawing to one side. Houses of these

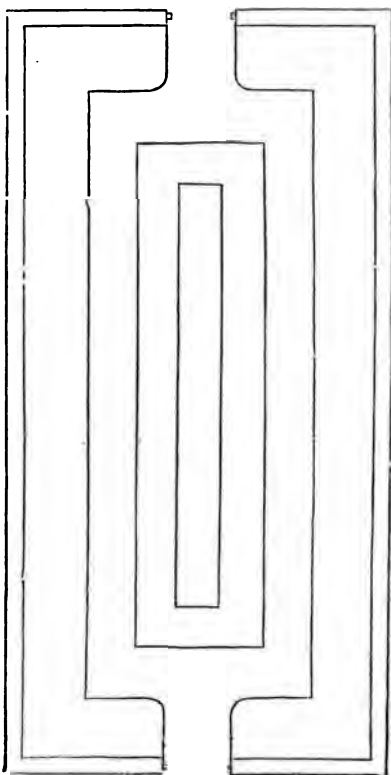
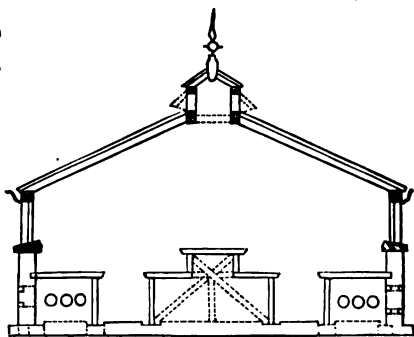
latter forms, however, claim the attention of amateurs through being specially adapted to their wants: for instance, many a blank wall, which is a constant eyesore, can be covered with such a structure, and thus made to considerably increase the pleasures of a garden, and that too with but a slight curtailment of the ground, which in gardens of small extent is of considerable importance.

A word or two in reference to those little glass structures which are so often attached to houses in London and other large cities and towns, and styled conservatories, may not be out of place in this chapter, and firstly, we say, do not be over sanguine of success with them, for they are usually miserable receptacles for plants, erected to please the whim of the architect, who generally has not the most remote idea of what is, or is not, required or suitable for the future occupants, and is not always even capable of making them ornamental. This state of things is not, however, confined to small conservatories unfortunately, for we have seen large glass houses attached to country mansions which are nothing better than graves for the plants placed in them, merely because the builder has chosen to place them in some corner left blank by the style of architecture, or they are constructed merely to give a finish to his building, he all the while knowing nothing, and caring as little, who may reap the reward of his horticultural ignorance. Having, however, one of these small structures to deal with, say in a large town, we must endeavour to turn it to the best possible account, and here one of the chief difficulties occur; for while those in possession of a house of this description are generally amateurs who have less time to

devote to their garden, and are probably not so well versed in the requirements of plants as those living in the country, with the advantage of large gardens, these little conservatories require their possessor to have an intimate knowledge of the wants of plants, to enable him to choose those which will thrive in them. For the assistance of such persons we should say, do not attempt to grow any flowering plants of tender constitution, for they will not thrive, and all the time they exist will present a sickly and pitiable appearance. Such things as Cape Heaths and hard-wooded New Holland plants should also not be attempted, as disappointment is sure to follow; and, indeed, until Ferns and other ornamental-leaved plants are more largely grown in such structures, they will always look untidy, and whenever entered will create a feeling of regret on the part of the proprietor. To render these unfortunate little conservatories pleasing, therefore, we advise that the principal objects should be ornamental plants of robust constitution, with leaves stout in texture, either green of different shades or variegated, while to vary the scene, and to enliven the whole, some flowering plants should be mixed with them, but they should always be in the minority. The plants most suitable for the houses here described are to be found amongst Palms, Dracænas, Ferns, Begonias, Agaves, Yuccas, Anthuriums, Aralias, Crotons, and many others, enlivened with flowering plants which will vary according to the season—in winter and spring it may be Dutch bulbs, Amaryllis, Lachenalias, Cyclamens, &c., &c., these in time will give way to Roses, Rhododendrons, Pelargoniums, Fuchsias, Double Petunias, and a host of other things. By such an arrangement the general feature will remain, and as these can be more easily managed than

flowering plants, the houses will in this way afford much more pleasure than under other circumstances.

To return, however, to the subject of plant houses: we here give woodcut illustrations, showing the end section and general plan of a span-roofed house suitable for the cultivation of ornamental-foliaged plants requiring stove treatment. The dimensions are:—length fifty feet, width twenty feet, and height twelve feet. It is provided with a stage or table of slate next the outer wall, which extends round the sides and ends; the footpath is three feet wide, and the centre is occupied by a table with a raised stage along the middle;



these slate stages should rest upon iron supports. The best material for the floor we believe to be concrete, made with Portland cement mixed with sand, for when thoroughly set this makes a substantial and comfortable pathway, is very lasting, and can be kept clean with little trouble or labour.

The double or folding doors are the best for such structures, because if large plants have to be moved in or out, they afford greater space for the purpose than the ordinary single door; they should also always be made to open inwards—it is far more convenient, and they are less liable to be broken by the violence of the wind. The side lights or sashes may be fixtures, or they may be made to open (we prefer the former plan), and have some large iron or slate ventilators built in with the brickwork beneath them, and immediately opposite the hot-water pipes, as shown in the plan; by this means the air is prevented from blowing upon the plants in a raw or cold state. The benefit of this arrangement is very great during autumn and spring. We also recommend that large drain pipes should be laid in the ground, passing from the outside, under the foundation, to the inside of the house, and rising under the heating pipes; by this means fresh sweet air, so beneficial to plants, may be admitted even in severe weather without detriment, which could not be done under the old system of ventilating by the side lights only. The lantern roof, as shown in our woodcut, affords the best form of top ventilation, although slightly more expensive at the first.

A word respecting lean-to houses. As before remarked, they can be erected where sufficient space cannot be spared for any other form. A good plan for such a house may be obtained by cutting in half that given

in this place for a span-roof, the length of course being altered to suit circumstances, and in this case the lantern system of ventilation or the ordinary sliding sash may be adopted.

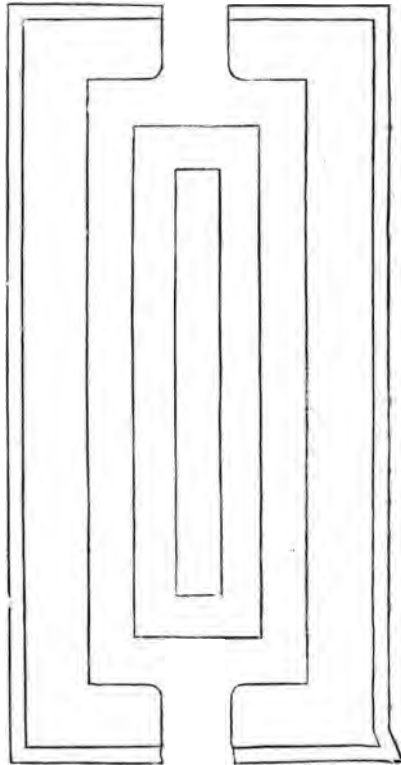
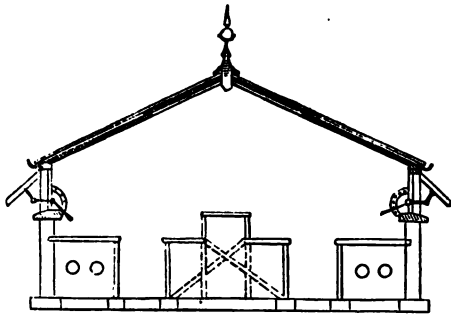
GREENHOUSES AND CONSERVATORIES.

 HERE are, however, a quantity of plants which come from tropical countries, yet, as they are found growing at considerable elevations, only require protection from frost and piercing winds, and we here give a transverse section and ground plan of a house suited for the cultivation of plants from such countries as the Cape of Good Hope, New Holland, New Zealand, Chili, or, indeed, from most of the temperate regions of the globe. The dimensions and general features are the same as in the structure recommended for stove plants, but with this difference—that in the greenhouse the side lights are all made to open, and the lantern is not used, but the upper sashes of the roof slide up and down in the ordinary way. The underground system of ventilation should be applied to this structure as well as to the stove, as it affords means of maintaining a pure and healthy atmosphere in the interior, without injury to the plants, even in the most severe weather. Fresh air is most essential to the well-being of greenhouse plants, but cold draughts must be avoided, for nothing is more injurious to plants of any kind. Indeed, such often result in their speedy death, therefore carefully attend to this in giving air to plant houses.

In heating such a structure as that we have here recommended, two rows of pipes for hot water will be

found sufficient ; and even these must not be brought into use unless artificial heat is absolutely necessary. Dampness in the air during the winter months is far more injurious to greenhouse plants than a somewhat low temperature ; and heat should be applied to the house occasionally during the day-time, in order to dry up any superabundant moisture, always taking the precaution to have plenty of ventilation, both at the top and sides.

The dimensions of the houses we have described above will be found too small for those intending



to grow large specimens of ornamental-leaved plants, we therefore give a woodcut illustration of the conservatory in our own establishment which is devoted to this class of plants. The length is a hundred feet, width forty feet, and height twenty feet; it forms a fine ornament to the place, and is sufficiently large to contain a beautiful and varied collection.

Conservatories are often attached to the mansion, in order that the proprietor and his family may be able to enjoy the beauties of the plants, when the weather is too inclement to permit of their visiting the stores and greenhouses, situated, it may be, in various distant parts of the garden. The ridge and furrow form of roof is often adopted for these structures, but we prefer the span-roof to any other. In some, the plants are planted in prepared borders, or if all are not so planted, some of the more important are so treated, in order that they may form permanent and striking objects, and thus add to the beauty, by contrast, of other plants which are brought in from time to time from the smaller houses. If no plants are to be grown out of pots, we advise the floor to be concrete, the same as recommended for the other houses, but if the plants are to be grown in open borders or beds, the first thing must be the removal of the ordinary soil to the depth of about four feet, then fill in some eighteen inches with broken bricks and similar material, such as will form and maintain a perfect drainage, the superabundant water being carried away by a drain on the outside of the house. Above this, turves of fresh-cut peat are to be laid, with the grassy side downwards; while the remaining portion is to be filled up with good soil, of the quality and texture most suitable for the plants intended to be grown. No manure

should be used, as this is apt to cause rank growth, which is not required in the majority of conservatory plants, or they soon become too large for the building; but should any little stimulus become necessary during the growing season, it can be easily administered in a liquid state.

The whole of the plants should be so arranged, that a pleasing contrast of foliage may be presented to the eye; and this can only be satisfactorily produced by a thorough knowledge of the habits of the kinds introduced, and which should be well studied before a permanent work of this kind is commenced.

In conservatories of less extent, it is rare that any but a few climbers are planted out, and therefore the plants can be removed to fresh places, and the scene more readily varied. During the winter months especially, Dutch Bulbs and various other plants should be introduced, to give the whole a gay appearance, because, at this season of the year, this part of the garden is the most enjoyable to the ladies of the family, who are often prevented by wet or inclement weather from visiting plant houses which are situated at a distance from the mansion.

The finest example of a tropical conservatory we ever saw is the one at Chatsworth Gardens, the property of his Grace the Duke of Devonshire, and at the time we saw it the plants were in excellent condition, reflecting great credit on Mr. Speed, the head gardener; the fine Palms and Musas give it a splendid tropical effect, and the beauties of all are considerably enhanced by a gallery, which thus enables the visitor to inspect the plants above and below, and no large plant house should be erected without a structure of this kind.

GLAZING AND VENTILATING.



WE shall pass only a few remarks on this subject, to enable the amateur to make a proper selection of material. For general use we have found the 21-oz. sheet glass the most serviceable, as it is sufficiently stout to resist all ordinary pressure. It is also wise to use a medium-sized square; neither very small ones nor over large ones are to be recommended. A very convenient size for the panes used for the roof is about two feet six inches in length, and nine inches in breadth; the same width should also be used for the front sashes.

On the subject of Ventilation we must speak more decidedly, for it is of the highest importance. A constant renewal of air in plant houses is essential to the well-being of its occupants; indeed, where the necessary temperature can be maintained, we would never quite close the house, day or night, except in severe weather. We wish, however, to be properly understood upon this subject. By good ventilation, we mean always to avoid draughts and currents of cold air, these being most injurious to plants of all kinds. The adoption of the underground ventilators recommended in the construction of the plant houses will entirely obviate any ground of apprehension on this point; and if the sides of the ventilators in the lantern roof are covered with fine gauze wire or perforated zinc, evil will be most satisfactorily guarded against. The use of this latter precaution will only be necessary during winter, as in the summer a greater volume of air may be admitted with advantage, and consequently the heated portion will require a readier means of exit. Plant houses ventilated upon these princi-

ples will always have a fresh and healthy atmosphere—a condition which will not only impart strength and vigour to the plants, but will also be far more enjoyable to the cultivator. Some amateurs may think we have attributed too much importance to this question of ventilation. We recommend those who entertain such views to observe closely and contrast the condition and appearance of plants in well-ventilated and in ill-ventilated houses, and we feel convinced they will very soon acknowledge that we are correct in saying that ventilation is a point of vital importance.

HEATING.



OUR remarks upon this subject at page 8 in *Stove and Greenhouse Flowering Plants*, may be repeated here with advantage. Stoves for the cultivation of ornamental-leaved plants should be kept at a temperature ranging from 68° to 80° during summer, and from 60° to 70° during winter. An intermediate house is also very useful where a large and varied collection of plants has to be accommodated. By an intermediate house, we mean to imply a house in which the temperature ranges between that of a stove and that of an ordinary greenhouse.

Premising that as yet nothing has been discovered to supersede, or even to equal, a good hot-water apparatus for heating plant houses, the first consideration is a boiler—what kind, or whose boiler is the best? This is a question not easily settled, for hot-water boilers are now made of shapes and patterns without end. Most cultivators, however, have some predilection in the matter, and as very

much depends upon circumstances and locality, we may safely leave them to make their own selection.

A boiler having been selected, the pipes will be the next consideration. In regard to these, it is always true economy to have plenty of heating surface in the house—that is to say, a quantity of piping which will give sufficient warmth with a moderate fire. Great waste of fuel, and much injury is done to the plants, through being compelled to drive the boiler hard to maintain sufficient heat, which state of things is brought about by want of piping and not having sufficient surface. The boiler should be fixed outside the house, and entirely independent of it, for no matter how carefully the brickwork is built, it will become defective by constant wear, and then, if inside the house, through the escape of smoke and sulphureous gases, the ruin of many fine specimens may be speedily brought about. For jointing the pipes we have for many years used india-rubber rings, which are made specially for the sizes in which the pipes are cast, and we find they answer admirably. The ease with which a joint can thus be made is a great advantage, and, moreover, they last for many years without leaking, while should anything go wrong, the pipes can easily be separated without expense, or loss of piping.

It is a practice with many plant growers to steam their houses regularly. This may in some instances be beneficial, but still the practice is open to objection, and if a sufficient heating surface is provided, it need not be resorted to in order to increase the heat, while for any other purpose it is not, in our opinion, necessary, for by frequent applications of the syringe, and by pouring water upon the tables and floors, a sufficiently moist atmosphere can be maintained without any risk whatever.

CISTERNS.

THESE are very necessary in all houses devoted to plant growing, as the rain water, which may thus be collected from the roofs, is the very best that can be used. To have this water in a proper state for the plants, the cistern or tank must be inside the house, and so exposed that the water may become nearly of the same temperature as the atmosphere; cold water applied to the roots of stove plants is most pernicious. Therefore, having fixed on the most convenient part of the house for the tank, build up the sides from the floor, making the top of the centre table the top, or if more convenient sink it below the ground level. In the latter case, it would be desirable to have a pipe in connection with the boiler passing through it, for the water, when stored below the surface, will be much colder than the atmosphere of the house. The best material for cisterns is slate, but brickwork, with a good coating of Portland cement, will answer the purpose equally well, and these materials are perhaps to be preferred when the cistern is placed below the ground level.

SHADING.

THERE is a great want of some better material than we yet possess for shading plant structures—a material which shall possess sufficient strength, without being so thick as to cast too deep a gloom over the interior of the house. We are extremely sorry that all attempts to supply the want have up to

the present time proved fruitless. The best material we can recommend is canvas, which on one side must be made fast to a strong roller, and on the other must be nailed to a lath fixed lengthwise near the top of the sashes. In mounting the blinds, care must be taken that they are quite equal in breadth throughout, or the roller will not run regular. A narrow covering should be fixed along the ridge of the house, under which the blind may rest when not in use, in order to protect it from wet. The blinds and rollers may be taken down during the winter, as little or no shade will be required during that period ; and if they are looked to after damp weather, and in winter thoroughly dried and stored away in a dry shed, they will last for several years. Some cultivators, however, like to use them as a protection in winter on frosty nights, as recommended in our "*Orchid Manual*;" and when this is done they must be rolled up at daybreak, so that no light may be excluded from the plants during the short winter days. Blinds for the sides can be made of canvas or tiffany ; we use and prefer the latter. The strips should have rings sewed to them on both edges, to fasten on hooks, fixed in the house at corresponding distances. This fixing is necessary to prevent the wind blowing the blind on one side, and thus exposing any part of the interior to the sun's influence in an unguarded moment.



SOIL.



HIS is an all-important matter, but one very much neglected both by amateur and professional gardeners, who too often act as though anything in the shape of soil is good enough, but unless good suitable mould is used, success cannot be obtained. For as different plants affect different soils in a state of nature, the cultivator must endeavour to utilize the hints thus given to him. Hence the importance of making composts suitable to the requirements of the plants. To have this department under proper control, a place should be set apart in some convenient quarter of the garden, for keeping a stock of the different kinds of earths, manures, &c., which are required, as well as a supply of pots. This is designated the compost yard. The various kinds of earth or soil should be neatly stacked up, in order that by age they may become mellow, and better adapted for the potting of tender plants than when newly dug. In selecting soils it must be remembered that the top spit is always preferable.

Loam.—This is of two kinds—light and heavy. The first is generally pale yellow in colour, but sometimes blackish; the latter is deep yellow, and feels somewhat greasy when taken in the hand. These should be stacked separately, with the turf and living grass downwards, placing a layer of manure over every layer of loam of the heavy quality; in this way the manure will become thoroughly incorporated with it, and when cut out for use it will be found in a nice friable state. The quality of loam varies considerably in different parts of the

country ; a good kind, and one which we use ourselves, is obtained from Wanstead, Essex.

Peat.—This is also of two kinds. That which is composed principally of decayed mosses and woody materials, and is mostly used for burning, is not of much value for in-door plant growing, though some kinds of plants thrive well in it. The peat most serviceable for our purpose is composed of decayed vegetable matter, and contains a considerable amount of sand ; it should be stacked with the top side downwards.

Leaf Mould.—This is formed of thoroughly decomposed leaves, collected in autumn, kept moist, and frequently turned over to facilitate decay. This kind of soil ought not to be used before it is two or three years old.

Manure.—A good heap of this should always be kept in the compost yard, so that none may be ever used which is not thoroughly decomposed.

Sand.—This should be kept under cover, and may be either white or brown. The white or silver sand procured at Reigate, in Surrey, is the best ; next to this comes sharp river sand.

These various kinds of soil being stored up in the compost yard, and fit for use, any of the mixtures recommended in the following pages can be made up for use as required.



POTTING.



THE first things to be considered are the pots: of these little need be said, as everyone is acquainted with flower pots. The best kind of pots for specimen plants are those with a movable bottom, because the plant can be set upon a stand, and the pot gently slipped down, thus allowing the condition of the roots and drainage to be examined with the greatest ease to the operator, and perfect safety to the specimen.

When the pots are selected they will require draining. This is of vital importance in the operation of potting; therefore we say, once for all, drain well or success must never be even hoped for. At the same time it should be borne in mind, that the throwing of a large quantity of potsherds into a pot in a careless manner, is not the proper method of securing good drainage. If broken potsherds or oyster shells are used, they should be placed with the hollow sides downwards, finishing off with a layer of smaller ones at the top, the whole being covered with rough peat fibre, to prevent the soil mixing with it. Some plant growers begin repotting at a stated time in the spring, and go through their whole collection at one time. This system may be convenient, but it is certainly unwise, and most unnatural. It is impossible, indeed, to lay down any definite rule; for as all plants do not start into growth at the same time, though in the same temperature, those which are dormant cannot take up the nourishment from the new soil, which consequently by frequent waterings becomes soddened and comparatively old before the roots are in a fit state to move into it. It has always appeared to us—and wher-

ever practicable, we have been guided by this in our practice—that the very best time to repot a plant is in spring, just when it begins to push forth new growth, because then the roots and branches are acting in unison, and both are in a fit state to receive fresh nutriment.

Everything being in perfect readiness—the compost properly mixed, and in a nice half moist condition, neither wet nor dry, and the pots either new or clean, dry, and properly drained, the plant to be shifted, if a large one, should be stood upon the stand already referred to, the pot slipped down, and the old drainage carefully removed. The roots if matted must be disentangled, and as much of the old soil taken away as can be removed without injury to them. Then some of the new compost must be put into the fresh pot, just sufficient to bring the surface of the old soil to within about half an inch of the top, and having carefully placed the plant in the middle, and at the proper level, the new soil is to be filled in around it, care being taken to press it down quite firmly. After this operation has been performed, a little higher temperature and extra shade should be given to the plants, to prevent them suffering from the slight check which repotting naturally must give them, and to encourage them to put forth fresh roots more quickly. The only difference between shifting or repotting large and small plants is, that in the case of the latter, the plant can remain in the hand of the operator, and the stand need not be brought into use. Those plants which have strong coarse roots may have a large shift each time, but care must be taken not to over-pot those having fine and delicate roots, as it is far better to repot twice or three times, than to risk the health if not the life of a plant by over-potting.

Little more need be said upon this subject, save that the sieve, so necessary to some cultivators, should be utterly discarded, and the soil prepared by being chopped into pieces with a spade; by the time it is mixed together it becomes sufficiently fine, and needs no sifting.

WATERING.



AFTER the potting season, and as soon as the roots have begun to run freely in the new soil, water will have to be supplied more liberally than during the winter or resting period, while as the days increase in length, and the sun in power, scarcely too much can be given to stove plants, if the roots are in an active state and abundant throughout the soil, and the drainage is in good order. At this period, too, the syringe must be brought into play, to refresh and keep the foliage clean and to create a genial moist atmosphere, which is so essential to tropical plants. Care must, however, be taken that the syringe is not used with the sun shining fully upon the house, or the result will be the burning of the leaves, and the disfigurement of the plants for a long time. There are also some few kinds of plants that do not like to have water thrown over their leaves, and the peculiarities of these must be attended to. As the season of growth draws to a close, and the days become shorter and colder, the atmosphere of the stove must be gradually reduced to a drier state, and less water must be given to the plants, both to the roots and overhead, but the plants must never be allowed to flag for want of water, for as their beauty depends upon their foliage, this would ruin their appearance.

This is a marked difference in the treatment necessary for flowering stove plants, and those grown for the beauty of their leaves only.

The best time of the day for watering plants during the summer season is towards evening, after the houses are closed, but in autumn and winter this operation should always be performed in the morning, so that all superabundant moisture becomes dried up as rapidly as possible.

INSECTS.



ROPICAL plants are all more or less liable to the attacks of several kinds of insects, which is, however, only in accordance with natural laws; but as these are injurious to the plants, rendering them unsightly, crippling their leaves, and ultimately depriving them of life, it behoves the cultivator to use any and every means in his power to prevent their attacks, for if they succeed in gaining a footing upon the objects of his care, he must wage a war of extermination with them, and never cease until the last of the enemy or enemies is destroyed. Stove plants suffer principally from the attacks of Green Fly, Mealy Bug, Turtle Scale, Black Thrips, and Red Spider.

The Green Fly may be destroyed by fumigation with tobacco paper, by syringing with tobacco water, or dusting with tobacco powder or snuff. In the latter case, the snuff must, after a day or two, be well washed off with the syringe.

The Mealy Bug is a small white powdery insect, of which the female is wingless, and too frequently found upon the

occupants of our stoves. The insects must be carefully washed off by means of a small brush, and warm soft soap and water, or they may be kept under by employing some of the specifics which are advertised at the end of the volume, all of which we have found excellent remedies, so that we cannot recommend one in preference to others.

The Turtle or *Brown Scale* is also a great pest, particularly to certain kinds of plants; it may however be destroyed in the same manner as the Mealy Bug.

The Thrips is a very injurious insect, but it may be eradicated by fumigation with tobacco or tobacco paper, which, if properly used, will totally destroy it; or the plant may be syringed with some of the before-mentioned remedies.

The Red Spider speedily renders unsightly the foliage of any plant that it attacks, destroying the fresh greenness of the leaves, and turning them to a dirty white or brown. The most effectual mode of destroying this pest, when it has been allowed to spread, is to sprinkle some flowers of sulphur upon the hot-water pipes, and shut the house up close; this remedy must be used with great care, for if the pipes should be too warm, the foliage would suffer. It is far better, however, to keep a careful watch upon the plants, and destroy the spider when it first makes its appearance, as extreme measures oftentimes cause the death of the plants. It cannot live in a thoroughly moist atmosphere.

Some cultivators maintain that insects are in all cases the effects of disease, and not the cause; and that plants, when treated in a proper manner, will not become infested by them. Though not prepared to endorse this assertion in its fullest sense, we yet believe it to be correct, so far as this—that sickly or unhealthy plants

are more liable to attack. There is no better safeguard against any serious attacks of insects than keeping up a vigorous state of health in the plants, and maintaining strict cleanliness in the structures in which they are grown, and in the various materials brought into use in the course of their cultivation.

PALMS AND THEIR USES.

HE various genera included under the popular name of "Palms," comprise some of the most noble and majestic objects in the whole vegetable kingdom. Their numbers are something extraordinary, both as to species and individuals; and although casual observers may think they have a somewhat similar appearance, their differences are quite in keeping with their numbers. Thus some have stems little thicker than a straw, and only a few feet in length; whilst others have stout columnar stems, towering upwards, until they reach a hundred or a hundred and fifty feet in height, their peculiar flabellate or pinnate plume-like leaves giving them a most noble and picturesque appearance. Others, again, have slender stems which climb over and amongst the forest trees, reaching several hundred feet in length.

Palms are of immense importance in an economic point of view, and we therefore venture to hope a few remarks upon their produce will not be considered uninteresting or out of place in the introductory pages of this work.

From this order of plants are obtained most of the

necessaries of life of the aboriginal tribes of the tropics, and the inhabitants of Europe consume immense quantities of their produce in the shape of fruits, oil, wax, sago, sugar, &c. They play, indeed, a large part in supplying our daily wants. As an illustration *Elais guineensis* may be cited. This supplies the African Palm Oil, and is a very common plant throughout Western Africa; the stem is straight and stout, some twenty or thirty feet high, and supports long pinnate plume-like leaves. Some idea of its importance may be formed, when we relate that oil from this plant to the value of £1,500,000 is annually imported into this country, and used extensively in the manufacture of candles and soap. The oil also forms an ingredient in almost every meal of the Africans, who use it profusely for smearing their bodies to enable them to resist the bites and stings of insects; from it they also obtain a wine which is largely consumed and much relished by them.

Dates, the produce of *Phoenix dactylifera* (although only appreciated by us as a luxury), form the chief support of the desert tribes of Arabia, Palestine, Egypt, and Northern Africa, and also of their domestic animals, for camels, horses, and dogs are equally partial to them. The tree is also largely cultivated for its fruits in various parts of Africa, and to some extent in Western Asia and Southern Europe. The produce of these trees must be immense, as each bunch contains some thousands of fruits; a single tree is said to yield nearly two cwt. of dates as a single crop, and yet only a few tons weight are annually imported and consumed in the United Kingdom! In addition to the fruit, the Arabs turn the wood and leaves of *Phoenix dactylifera* to excellent account in the construction of their dwellings, the wood forming

the framework, and the leaves being used as thatch, whilst their domestic utensils and basket-work are also made of this wood. As the "Date Palm" is found plentifully in Palestine, it is in all probability the plant named in holy writ, and from which we have derived the term of "Palm Sunday."

Another most nutritious and important article of food derived from this order is the well-known sago, which is yielded more or less plentifully by various Palms, but the best sago of the shops is mostly brought from Singapore, the produce of *Sagus* (or *Metroxylon*) *Rumphii* and *Sagus* (*Metroxylon*) *lævis*, and is the natural pith of the stem. These trees, it is said, do not yield much sago if cut down before they are twenty years of age, at which time they are mostly felled, their stems cut into lengths and split in halves, when the pith is separated by washing in cold water, after which it is allowed to settle and the water is drawn off, and the starchy granules properly dried for consumption. Of this article about 150,000 cwts. are annually imported into the United Kingdom. It is also used extensively by the native population; indeed, when made into thin cakes it is a staple article of food of the inhabitants of the Eastern Moluccas. Cycads also yield small quantities of an inferior kind of sago, which, however, seldom if ever comes to this country, and we only allude to them here because they are often called "Sago Palms"—which, however popular, is most erroneous, for the Cycads have no affinity with the real producers of this nutritious article of diet.

The canes called rattans are the produce of various species of *Calamus*, a genus of climbing Palms, which are very abundant throughout India and the islands of the Indian Archipelago, but chiefly of *Calamus Rotang*, *C.*

rudentum, *C. Royleanus*, and *C. riminalis*, and it is computed that six or seven millions of these canes are annually imported into this country, and consumed in the manufacture of carriages, in making seats to chairs and stools, in the construction of couches, and in broom making; they are also dyed and substituted for whale-bone in the ribs of umbrellas. "Malacca Canes" are imported from Singapore and Malacca, and are the produce of *Calamus Scipionum*, which is a native of the Island of Sumatra; the walking canes imported under the name of "Penang Lawyers," are also the produce of various species of this genus. From *Calamus Draco*, a resin is obtained and imported into this country under the name of "Dragon's Blood," which is extensively used for colouring varnishes, &c., &c.; whilst from the leaves of nearly all the species, handsome and very ornamental hats and caps are made.

Leaving the Calami, we shall next bring to the notice of our readers the various uses of that exceedingly handsome Palm, *Cocos nucifera*, the fruit of which, by the name of Cocoa Nut, is too well known to need description. Independent of the value of its nuts, nearly every part of the plant is turned to important uses. Its timber, under the name of "Porcupine Wood," is brought to this country in large quantities, and used in the construction of ornamental chairs, couches, and various other kinds of furniture; many fancy articles are also made of it, such as fans, tea-pots, walking-sticks, combs, &c. The leaves are used for thatching the native huts, and for making into baskets; whilst the well-known nut is a nutritious article of food, and from it is extracted an oil of excellent quality, which is imported into this country to the extent of about 2,000 tons annually. The shell

of the nut is often beautifully and tastefully caryed on the outside, and used for making various useful and fancy articles, such as spoons, wine-cups, tea-cups, tea-pots, baskets, &c., &c. If the uses of this plant ended here, it must be esteemed as highly useful, but one of the principal products of the Cocoa Nut has not yet been named. The dense mass of fibre surrounding the nut is imported, to the extent of about 10,000 tons annually, under the name of "Coir," and from it are manufactured mats of all kinds, floorcloth, cordage, cables, brushes of every description, bags, hats, caps, bonnets, and many other such things.

The *Palmyra* or *Borassus flabelliformis* is a large-growing Eastern Palm, of immense importance to the native population; indeed, it is said to form the chief support of upwards of 6,000,000 human beings, and in a poem descriptive of the value of this plant, 800 distinct purposes are enumerated to which its products may be applied. The fruits, which are prepared in a variety of ways, form the principal food of the poorer natives. The leaves are used for thatching and fencing; they are likewise made into mats, baskets, hats, and umbrellas, and when cut into long strips are used by the Hindoos for writing upon; wine or "toddy" of excellent quality is also obtained from *Borassus*, which is largely drank as a beverage. It is also boiled down into "jaggery" or sugar, and in this latter state extensively imported into this country.

Another Palm, *Caryota urens*, which is distributed throughout Malabar, Assam, Bengal, and has also recently been found in Northern Australia, yields a large quantity of sugar, and from its stem is obtained a nutritious farina, resembling true sago, although much inferior

to that article. The "Kettul" fibre of commerce, largely employed in the manufacture of ropes, baskets, hats, brushes, and brooms, is obtained from this and perhaps some other species of Caryota.

The material imported from South America under the name of "Piassaba," is the produce of *Attalea funifera* and *Leopoldinia Piassaba*, and is extensively used by the Brazilians and others for rope making, and by us for making the brooms for street sweeping, popularly known as "whalebone" brooms. The large seeds of *Attalea funifera*, called "Coquilla Nuts," are dark brown, and take a high polish; they are manufactured by the turner into various elegant toys, such as humming tops, boxes, and also into handles for doors, umbrellas, walking canes, bracelets, rosaries, and many other things. From the leaves of this plant the South American Indians make quivers, in which they carry their poisoned arrows, which latter are made from the beard of another Palm (*Encarpus Batana*), the part used being the stiff slender nerves of the decayed base of the petioles, whilst the young slender stems of *Iriartella setigera* furnish them with the "Gravatana" or blow-pipe from which they are discharged. Indeed, the Indians draw the greatest portion of their necessaries from Palms: from them they obtain meal, wine, sugar, and oil; their leaves and leafstalks afford good thatch and material for house building and fences; from their fibre is obtained strong cordage, which they convert into cables, fishing-lines, fishing-nets, hammocks, brushes, &c.; from their wood they make lances, harpoons, and blow-pipes for their arrows, which are furnished by Palm spines, whilst from the swollen stem of *Iriartea ventricosa* they form their canoes. The hats worn in this country during summer, and designated "Chirp

Hats," are the produce of *Chamærops* leaves, from which are also made brushes, baskets, and coats, whilst the Chinaman, in addition to his coat made of *Chamærops* leaves, constructs one from the rough netted fibres which enclose the leafstalks. The large flabelliform leaves of *Corypha umbraculifera* are used in Ceylon, where it is called the "Talipot Palm," as umbrellas, and they are converted into fans, and carried before people of rank; when sewn together they make excellent tent covers, being very light and perfectly waterproof. In Java and some of the other islands of the Indian Archipelago, stout shields for purposes of war are also made of *Corypha* leaves. The Palms of Western Africa, with the exception of the Oil Palm (*Elais guineensis*), and to which we have already referred, do not afford Europeans any material for exportation; only about eighteen species are recorded from that portion of the globe, of which several are in cultivation. The genus *Raphia* is probably the most useful (after *Elais*) to the native population; huts are made and thatched with the leaves and leafstalks of the *Raphia*, also beds and hammocks, and what little clothing is worn. All sorts of mats and basket-work are made from the leaves, which are oftentimes dyed and worked up into very elegant patterns. Wine or "toddy" is also obtained in large quantities and of excellent quality from one species (*R. Hookeri*), and this plant is cultivated to some extent for this produce, although—singular to relate—that thatch or roofing made of the leaves of this kind last only a third of the time of the others. *Phœnix spinosa* also yields a wine, and the fruits, although not so fine as are those of *Phœnix dactylifera*, are much relished by the negro tribes. The young leaves before expanding are cut and used for making a fine quality of plait, of which

hats and caps are made somewhat extensively at Accra, a settlement on the Gold Coast, and in the territory of Ashantee. The stems of *Calamus secundiflorus*, another West African species, are cut into small lengths and carried upon long journeys, the soft central part being eaten after they have been properly roasted. There would, however, be no space left for other matters in this little book, were we to enumerate in detail the uses to which Palm produce is applied, and we must therefore conclude this portion of our subject with the "Ivory-nut Palm," *Phytelephas macrocarpa*, the hard white fruits of which are imported in considerable quantities, and used for various useful and ornamental purposes. They rival ivory in whiteness, and from them are made, humming tops, thimbles, thimble cases, pincushions, rattles, whistles, and children's teething rings, buttons, door handles, handles for walking-sticks, dog whistles, and a variety of ornaments, which are frequently most elaborately carved.

Having taken a cursory glance at the economic properties of this noble order of plants, we must now turn our attention to their uses for horticultural purposes, and in this aspect every one must acknowledge that they stand pre-eminent. On their suitability for purposes of open air decoration in the summer months we have remarked in detail, in the chapter devoted to Sub-tropical Gardening, and therefore we purpose confining our remarks in this place to their culture and ornamental features, for the embellishment of the stove, greenhouse, conservatory, and dwelling-house. The word "Palm," until within only a few years, would seem to have impressed the minds of nearly all plant growers with dread, and with the idea that they were all gigantic trees, which it would be folly to introduce to our plant structures. Indeed, to such an

extent was the notion of the impracticability of their cultivation carried, that in many cases (some of which came under our own notice in our younger days), when seeds of these plants had been sent home, the time for planting and space required for raising them was most grudgingly spared, and we have actually known them cast aside as not worth one's being troubled with. Luckily we have now learned better, and have somewhat retrieved this great error, although not to the same extent as our continental neighbours; we trust, however, ere long to see their cultivation largely increased in this country. Those amateurs (and there are many) who imagine Palms to be too large for them, because they have only small or moderate-sized structures, are certainly not acquainted with the numerous and elegant small-growing plants comprised in the genera *Geonoma*, *Chamædorea*, *Areca*, and others, whose maximum height is only a few feet; but independent of the dimensions to which even the largest Palms attain when mature, all and any of them are exceedingly ornamental in a young state, their noble and majestic foliage producing an eminently tropical appearance; nor do any of them rapidly become too large to be accommodated in a medium-sized house. They may also be employed with considerable advantage for the embellishment of the drawing room in vases or jardinettes, or for the dinner table, and when they have so far increased in size as to be no longer suitable for such uses, nothing can be more effective for the decoration of entrance halls, corridors, or grand staircases; indeed, it is impossible to conceive any place requiring decoration in which Palms of some kind could not be advantageously introduced.

Palms are amongst the easiest plants to cultivate with

which we are acquainted, their chief requirements being good drainage, and an abundant supply of water to both roots and foliage—in the latter case, however, be sure it is clean. Perhaps the greatest error it is possible to fall into in growing Palms, is to keep them *dry* at any period of the year. Very many kinds of Palms grow on the banks of rivers—nay almost or quite in the water; others, although growing at considerable distances from running streams, are only found in humid places, or forming the undergrowth of the forests where little evaporation takes place; and even those species or individuals which seem to thrive in somewhat stony and dry places, have their roots deep down in the earth, where the parching heat and drought has little or no effect upon them. Whereas, under pot cultivation, theorists seem to utterly ignore the fact that they are burning and shrivelling up the roots, which in a state of nature never, or at most very seldom, are in the least degree affected. In growing Palms our practice is never to allow them to feel the want of water. Many of the kinds should be grown in water, winter and summer, and if it is possible to keep the water in which they stand slightly heated so much the better; if this cannot be done the next best plan is to stand them in large pans of water, which may be allowed to become dry once during the twenty-four hours, but never during the night. This latter point should be specially borne in mind by plant growers, for we have seen many plants completely ruined by inattention to it; and if those who advocate the drying up of plant houses would only think of and remember the heavy dews we have during the hours of night in England, they would be better able to appreciate what must be the state of things in a tropical country.

For soil, as a general rule, use one part loam, one part peat, and one part good vegetable mould well decomposed, with a good portion of sand added. This compost we employ in the seed pots, and for the first two or three years' growth, after which we prefer to add about two parts good fibrous loam in place of one; and when it is not desirable to put the plants into larger pots every year, a portion of the surface soil should be removed and replaced by good vegetable soil, which is sure to be attended with good effects to the plants operated upon. The pots must be thoroughly drained. In regard to repotting plants, we would strongly impress upon the minds of our readers, the necessity of preserving intact the large fleshy roots which are sure to be found coiled amongst the drainage. We have seen these ruthlessly destroyed, but it is a fatal error, for they are the feeders and real life supporters of the plant. Nature does not chop off these roots, or if through force of circumstances an individual plant is so situated that its roots suffer, the plant does not appear improved by it; and if we imitate nature it should be in her very best form, and not allow our plants under cultivation to be continually struggling for a bare subsistence. Should it at any time be necessary to reduce the roots of Palms by pruning, the plants should be plunged in a tank of water immediately after potting. To keep them dry under these circumstances, as many do, is an error which is almost sure to end fatally. The above system has been practised with good results by us for many years, and we venture to say those adopting the same means will never have to complain of failure.

SUCCULENT PLANTS.



UNDER this name are usually associated a variety of plants characterised by having fleshy juicy leaves, covered with a thick epidermis. In a state of nature they grow and flourish on dry sandy plains, or on bare rocky ground, where during the dry season they are exposed to the most intense drought, but as the surface of their leaves has few evaporating pores, they are able to withstand uninjured even the driest seasons. These plants belong chiefly to the following orders :—Cactaceæ, Liliaceæ, Bromeliaceæ, Asclepiadaceæ, Crassulaceæ, Mesembryaceæ, Euphorbiaceæ, and Amaryllidaceæ, comprising many genera, and a vast quantity of species. It is somewhat remarkable, that although these plants neither lack beauty of form nor diversity of colour, nor singularity or even grotesqueness of appearance—some, indeed, possess the most singular and weird-like forms to be found in the vegetable kingdom—yet they are discarded by the majority of plant growers. Now were we to follow the fashion (and we are sorry to find that fashion, independent of real merit, has a great influence upon plant growers), and ignore these plants also, the present chapter would not have been penned; but being impressed with the idea that if a few remarks were offered as aids to their cultivation, there might be some individuals who would be induced to endeavour to remove this reproach from British Horticulture, we purpose affording them a little space in our pages. Some few of the genera are, indeed, beginning to find favour with the public, and hence we have devoted space to them in the body of this work,

and we trust that both professional and amateur horticulturists will speedily be brought to recognise their merits and extend their cultivation; we allude specially to the genera *Agave*, *Yucca*, *Fourcroya*, *Dasyliion*, *Beaucarnea*, and a few others.

The plants belonging to this group are very easy to cultivate, and they will bear with impunity a greater amount of neglect than almost any other plants. That such is the case is most unfortunate for them, for their endurance has been put to such severe tests that starvation has set in, and in this state the plants may be made to assume such a miserable appearance, that the possessor is likely to become indifferent to them, and in such cases indifference soon leads to disgust, and the plants are either disposed of or thrown away; and thus, simply because they do not, when under a system of starvation, assume the characters which are produced in vigorous health and under liberal and genial treatment, the whole class of succulents is voted uninteresting and worthless. We cannot, therefore, but declare that their patient endurance, and wonderful tenacity of life, is a misfortune.

In speaking of liberal treatment for these plants, it will be well to state our exact meaning, for the term has certainly a somewhat different meaning when applied to succulents as compared with most other plants. We will, therefore, lay down a few general rules for their management. The first and all-important point is good drainage, which cannot be defective for even a short time without producing injurious effects upon the plants. For soil we prefer good loam and peat, in the proportion of two parts of the former to one of the latter, to which should be added some sand and broken bricks. Potting should be performed towards the end of spring or be-

gining of summer, during which season they will revel in the most intense light, and an abundant supply of water may be given to their roots, with an occasional shower over-head—this is what we here call liberal treatment. As autumn approaches, the water must be gradually withheld, in order to consolidate the tissues, or in other words, to ripen their growth, so that they may be able to withstand, without injury, our long dark winters. During winter very little water is necessary; they would, indeed, exist without any, but this is approaching too closely to the starving principle for the good of the plants, and we therefore advise an occasional, but judicious, application of water during winter, always choosing a bright sunny day for the purpose. At no time use shade for these plants; it is not only not requisite, but absolutely injurious. During the summer season the temperature will be high with sun heat, and no limit is necessary; but in the winter or dry season, a temperature between 40° and 50° should be maintained as nearly as possible, and at no time should the thermometer fall below 40°. Finally, the floor, and all parts of the house, should be kept perfectly dry until spring.

We append a list of some good and distinct Succulents, sufficient for a beginner to select from, any or all of which will succeed under the treatment we have just detailed. There are vast quantities to be had, as the cultivator will soon discover if he only acquires a love for these exceedingly curious and highly interesting productions of nature.

AGAVES, *see* page 74

Aloe ferox

grandidens

grandidentata

latifolia

Aloe nobilis

picta

prolifera

purpurascens

serra

ALOE serrulata

spicata

Zeyheri

ANDRONICUS maculatus**ASTROPHYTUM myriostigma****BRYOPHYLLUM calycinum****CEREUS Alacraportianus**

acutangulus

chilensis

Forbesii

gemmatus

glaucus

Jamacarii

multangulus

peruvianus

spachianus

strictus

tetragonus

CRASSULA coccinea

lactea

perfoliata

ECHEVERIA agavoides

atropurpurea

caleophana

campanulata

farinosa

glauco-metallica

metallica

pumila

retusa

glauca

secunda glauca

major

ECHINOCACTUS cornigerus

Echidne

electracanthus

helophorus

ingens

ottonis

Pfeifferii

platyceras

scopa

cristata

Stainesii

tetraxiphus

ECHINOPSIS Bridgesii

Decaisneana

Eyresii

formosus

Linkii

multiplex

obrepandus

ornatus

Schelhasii

texana

Zuccariniana

rosea

GASTERIA acinacifolia

Bowieana

ensifolia

formosa

laevis

maculata

obliqua

obtusifolia

spiralis

subnigricans

undata

verrucosa

GREENOVIA aurea**HAWORTHIA arachnoides**

coarctata

fasciata

margaritifera

mirabilis

planifolia

radula

Reinwardtii

rugosa

setata

subulata

tessellata

KLEINIA articulata

repens

tomentosa

MAMILLARIA acanthophlegma

conopsea

cornifera

crucigera

globosa

MAMILLARIA nivea

phymalothile
Scheidiana
spinosissima
straminea
verruculata
Wildiana

MELOCACTUS communis

MESEMBRYANTHEMUM

digitiforme
dolabriforme
echinatum
fibuliforme
nuciforme
octophyllum
rostratum
serratum
strumosum
taurinum
tigrinum
vulpinum

OPUNTIA albicans

candelabriformis
crassa
decipiens
decumana
ferox
horrida
intermedia
leucotricha
microdasys

OPUNTIA streptacantha

Tweedii

PACHYPHYTUM bracteosum

PILOCERUS senilis

Williamsii

ROCHEA falcata

perfoliata

SEDUM azoides

variegatum

carneum tricolor

Fabianum purpureum

multicaule

roseum

Sieboldti

medio-picta

spectabile purpureum

spirale

verticillatum

Wallichianum

SEMPERVIVUM arachnoideum

arborescens variegatum

Bollii

cæspitosum

californicum

canariense

ciliare

Donckelarii

holochrysum

robustum

serpifolium

tabulæforme.



SUB-TROPICAL GARDENING.



THE above term, as we understand it, signifies the using of various ornamental plants from tropical or sub-tropical countries, in conjunction with hardy trees and shrubs, in out-of-door gardening during the summer months; and thus produce in the open air some degree of resemblance to tropical scenery. This style of gardening is said to have been first brought into public notice in France, though whether it originated there or not, we cannot decide. Certainly we saw it practised in Germany, before we heard of it in France, but however that may be, it has been carried to a very great extent in and about Paris, and often with splendid results. Our own climate was at first thought to be unpropitious for this style of gardening, but we have certainly had a much higher opinion of the climate of England, especially that of the latitude of London, since we have seen the wonderful display produced by Mr. Gibson in Battersea Park, and witnessed the rich tropical effects he gives to the sub-tropical garden there, by a judicious selection of subjects, and by bringing his sound practical knowledge to bear upon his labours. This sub-tropical gardening has been repeatedly condemned, on account, it was said, of its expense, and of the uncertainty of producing a good appearance in this climate. Nevertheless we feel fully persuaded, that it will now never be written down, for the very reason that when properly managed, it is exactly the style of gardening to appeal to the good sense of all persons of taste.

In thus urging the claims of sub-tropical gardening upon our readers, we would by no means advocate the banishment of flowering plants from the parterre or pleasure grounds, but we believe that ornamental-leaved plants of noble or graceful habit, either used with them, or made to alternate with them, would produce an infinitely superior effect to that which is obtained from mere beds of colour, with little or no relief or support from surrounding objects. It is very easy to explain the antipathy which some people have towards the sub-tropical style, for in several instances which have come under our immediate notice, a trial has resulted in the destruction of choice and valuable specimens. The loss in these cases, however, proves nothing but the want of forethought and practical knowledge on the part of the experimentors, and the results do not warrant the condemnation of sub-tropical gardening, as a system, for the more favoured positions in these islands. No well-informed amateur or gardener would think of planting his *Pelargoniums*, *Verbenas*, *Calceolarias*, and other things, usually denominated "bedding plants," until they had been subjected to a gradual process of hardening or inuring to the open air. How reprehensible then was it, when the style of gardening now under consideration was first brought into notice in this country, for any of those who professed themselves to be enamoured of it, to at once commence putting it in practice, by removing from the stoves to the open air, large *Palms*, *Dracenas*, and other ornamental-leaved plants from tropical countries, without the slightest preparation. That this should lead to the speedy disfigurement and ultimate death of the plants is not to be wondered at, when it is remembered that, even supposing the kinds selected

were suitable, they had probably never before been out of the strong moist heat of a stove during the whole course of their existence, and as a natural consequence, their constitutions could not withstand the sudden change of position made, not only without due preparation, but without any preparation whatever.

There is another class of cultivators who decry sub-tropical gardening, solely on account of its expense, but these we imagine have not kept pace with the times, and made use of high-class "bedding plants," or else they must have formed the idea that only excessively expensive plants can produce a semi-tropical appearance in the flower garden. These, however, are not the facts, for many of the ornamental-leaved plants, which are adapted for this purpose in an eminent degree, are not so expensive as the new and high-priced "soft-wooded flowering bedding plants," so that taking into consideration the fact, that the use of the former will curtail to some extent that of the latter, the annual expenditure under the new system will be found about the same as under the old *régime*. We may, however, even yield a point, and admit that to an amateur who does not possess any other than the so-called "bedding plants," the first commencement of sub-tropical gardening will necessitate a somewhat extra expenditure, but then this will be compensated in one year, for during summer the garden will be increased in beauty and interest a hundredfold, and in winter, if a proper selection has been made, many of these plants may be removed to the dwelling-house, where all winter they may be used for the decoration of halls and corridors, windows and drawing rooms, or dinner tables—a use to which Verbenas, Calceolarias, and such-like plants can never be applied. Therefore we hold that the Ornamental-

leaved Plants will prove a thoroughly profitable investment.

Others have remarked to us, "that it is all very well to recommend the use of fine-foliaged plants in the flower garden during summer, but to carry it out, such an enormous quantity of glass is required that it never can become general;" and as we have taken up the cudgels thus far in defence of this system, we must endeavour still to use them forcibly. In answer to this last objection, we say that we firmly believe it will become general, and that it is fast, though quietly, taking hold upon the gardening community throughout the length and breadth of the land. And we add, that its adoption is not found to render necessary more plant houses or frames than were required under the previous system. Indeed, it is but reasonable to conclude, that as a curtailment of one set of plants is made, their places can be taken by the newly adopted ones. Many of the latter, however, be it remembered, will survive in the open air with a slight protection, except, perhaps, in exceptionally severe winters. Then such plants as Agaves and Yuccas may be stored in a shed or coach-house, where if kept perfectly dry they will winter well, but unless too large, we should recommend their being taken into the dwelling-house, and distributed in various suitable positions, as likewise may some of the Palms, Cordylines, &c., &c.; they will thus form beautiful objects of attraction, and prevent the plant houses being over-crowded. At the same time, this is a use of ornamental-leaved plants which we particularly wish to recommend to our readers, and which has induced us to devote some space to remarks upon "in-door gardening," for the more we see of our continental neighbours, the more we are persuaded that this is a custom too much

neglected by us, as a nation. Sub-tropical gardening is undoubtedly a step in the right direction. It has taught us to appreciate nature; shown us that the masses and lines of brilliant colour, with which we have been embellishing our gardens for some years past, can be greatly improved by contrast, and by mixing with them plants having bold and ornamental leaves, also that in adopting this style we have largely increased the beauty and interest of the garden; and by this means we can wander from place to place with the certainty of discovering some new feature to relieve and delight the eye, without the weariness which is felt in being continually confronted with lines of colour.

Having advanced thus much in favour of sub-tropical gardening, a few remarks upon what plants to use, and how to use them, will be expected of us; and in reference to the kind of plants to use, we must at once warn beginners against the error which nearly all have fallen into—that of planting out-doors any plants merely because they are exotics. The result of such a proceeding is anything but satisfactory or pleasing. The first thing to recommend a plant for this purpose is a decided character of its own—something that will stand out in bold relief and contrast with all its surroundings, either as regards the shape of leaf, size of leaf, colour, or habit. A clump of Cannas form a beautiful group, and contrast splendidly with a fan-leaved Palm, or with such plants as Wigandias, Castor Oil Plants, or some of the fine Aralias, and many other such comparisons might be made. The more distinctness there is in the plants used, the finer will be the tropical effect obtained, and the greater the interest in the garden.

The chief object therefore to keep in view, whether

using the ornamental-leaved plants in company with flowering plants or in isolated groups, is distinctness of outline and character in each, for we do not want groups of plants so similar in appearance that it requires close inspection to distinguish the differences. Keeping this guiding principle always in view, and having a proper selection of plants—by this we mean with respect to native locality, for it is not feasible to suppose a plant from the hot moist plains and swamps of the islands in the Indian Archipelago, would be as suitable as one from the mountains—the amateur or gardener cannot err, providing the surroundings are prepared as we shall afterwards explain. To prevent disappointment to those who may not have the convenience of a greenhouse, we may add that ample materials exist amongst hardy plants to form a very beautiful effect, and that where choice plants are used these hardy ones should be judiciously combined, for the ornamental character of a plant does not depend upon its being hardy, or requiring the temperature of the stove to keep it during winter; and although the hardy plants are without the province of these pages, we shall append to this chapter the names of a few of the most beautiful, as we feel, without in some way recognizing them, we shall leave the subject incomplete.

The next question which arises, is, how to use the plants, and here lies the chief art in sub-tropical gardening, for some stand exposure to the full rays of the sun far better than others—indeed, some plants that grow beautifully in the open air during summer, must have complete shade. The texture of the leaves, and the constitution of the plant, added to practice, will soon teach the operator these matters. It must be borne in mind, also, that a preparation of ground is equally as

important as in the case of "bedding plants," and we conceive the principle which Mr. Gibson has adopted at Battersea Park is undoubtedly correct. The main feature of his system is to provide drainage of the most ample and complete kind; indeed, wherever practicable, the beds for the tender plants are elevated with bricks some distance above the ground level, but the bricks are hidden by a covering of soil. They are, however, elevated not simply as a matter of drainage, but as a storehouse for the sun's rays, which are given out slowly in the form of bottom-heat, when the plants have not the benefit of the sunshine. It is quite possible, indeed, that in many cases this elevation of the beds may not be practicable, or compatible with the surroundings, and therefore we do not insist upon it as an essential, but the drainage is absolutely necessary to success. Therefore the soil should be taken out to some depth wherever it is intended to place a tender plant, and the whole filled up, to within a foot or eighteen inches of the surface, with broken bricks or other good drainage material, and upon this the prepared soil may be placed. The soil should consist of about three parts good loam, one part leaf mould, one part peat, and one of sand. After the plants are placed in position, we advise the surface to be covered with good decomposed leaf mould, and if place and plant are suitable, cover the ground with *Selaginella*, *Tradescantia*, or some other dwarf-growing thing that suggests itself as being adapted for the purpose. In the case of large Cycads, Palms, or such things, we by no means advise them to be planted out, but plunged in the pots or tubs in which they are growing. These plants form beautiful objects when plunged as single specimens upon the lawn, and also when grouped with other plants, and the situations

should be so chosen for the tenderer species, that they may be shaded during a portion of the day by some friendly tree, and sheltered from cutting winds and draughts by some neighbouring shrubbery of laurels or similar plants, and which are usually to be found in a pleasure garden. These, in addition to the shelter they afford, add materially to the effect in forming a background, by which the varied tints and forms of the sub-tropical plants are more conspicuously displayed.

In addition to the isolated specimens jotted about upon the lawns and various places, by taking advantage of curved or undulating lines of shrubberies, some exceedingly effective miniature glades may be formed, always bearing in mind, wherever a more than ordinary snug and shady corner occurs, to place the tenderest and most shade-loving plants, such as *Areca lutescens*, *Dicksonia antarctica*, *Cyathea dealbata*, *Alsophila australis*, *Thamnopteris australasica*, or similar things. In planting sub-tropical plants, the very opposite rule must be observed to that of planting "soft-wooded flowering" plants: in the latter case, symmetry and regularity is essential to produce a good effect; in the former, natural grace and distinctive characters are the leading charms, and these will be entirely lost, if straight lines and formal designs are attempted with the majority of them.



SELECT LIST OF PLANTS SUITABLE FOR THE OPEN AIR
DURING SUMMER.

ABUTILON

Thompsonii

AGAVE

americana

medio-picta

striata

variegata

applanata

coccinea

filifera

geminiflora

lophanta

potatorum

Salmiana

univittata

many other kinds

ALSOBILLA

australis

ALSOBILLA

excelsa

ANANASSA

sativa variegata

ANTHURIUM

acaule

cartilagineum

cordifolium

coriaceum

leuconervum

magnificum

Miqueliana

signatum

tetragonum

ARALIA

crassifolia

integrifolia

macrophylla

Sieboldtii

ARALIA

Sieboldtii variegata

aurea

trifoliata

ARECA

lutescens

ASPIDISTRA

lurida variegata

ATTALEA

nucifera

ARAUCARIA

Cookii

Cunninghamii

glauc

excelsa

BANKSIA

Cunninghamii

speciosa

BEAUCAEREA

glauc

recurvata

stricta

CALADIUM

esculentum

nymphæfolium

CANNASmany varieties, *see* p. 139**CARLUDOVICA**

palmata

rotundifolia

CARYOTA

furfuracea

sobolifera

urens

CEROXYLON

andicola

CHAMEROPS
 arborescens
 excelsa
 Fortunei
 humilis
 macrocarpa
 palmetto
COPROSMA
 Baueriana
 variegata
CYATHEA
 dealbata
 medullaris
CYCAS
 circinalis
 revoluta
DASYLIRION
 acrotrichum
 glaucum
 gracile
 latifolia
 serratifolia
DICKSONIA
 antarctica
 fibrosa
 squarrosa
DION
 edule
DRACENA
 australis
 Braziliense
 cannaefolia
 Cooperii
 congesta
 Draco
 Ehrenbergii
 ferræa
 nigrescens
 terminalis
 umbraculifera
ENCEPHALARTOS
 Altensteinii
 Caffer
 horridus

EUCALYPTUS
 globosus
FERDINANDIA
 eminens
FIGUS
 australis
 Brassii
 Cooperii
 elastica
GREVILLEA
 robusta
GRISLINIA
 macrophylla
HOLAMONEMA
 rubescens
KENTIA
 Baueri
 sapida
LIVISTONA
 australis
 borbonica
MONSTERA
 deliciosa
MUSA
 chinensis
 ensete
NICOTIANA
 Wigandioides
OREOPANAX
 dactylifolia
PANDANUS
 elegantissimus
 utilis
PAPYRUS
 antiquorum
PELARGONIUM
 anemonifolium
PHENIX
 dactylifera
 farinifera
 reclinata
 sylvestris
PHORMIUM
 tenax
 variegatum

PHILODENDRON
 cannæfolium
 Simsii
PHYTTELEPHAS
 macrocarpa
POLYMNIA
 grandis
RHAPIS
 flabelliformis
 humilis
RHOPALA
 corcovadense
 elegans
 Skinnerii
RICINUS
 many varieties
SABAL
 Adansonii
 Blackburniana
 umbraculifera
SANSEVERIA
 zebrina
SCIADOPHYLLUM
 pulchrum
SEAFORTHIA
 elegans
SONCHUS
 arboreus
 laciniatus
STRELITZIA
 angusta
 regina

THAMNOPTERIS
 australasica
THRINAX
 radiata
TRADESCANTIA
 discolor
 zebrina
UHDEA
 bipinnatifida
 pyramidalis
URANIA
 speciosa
WIGANDIA
 caracasana
 Vigieri
XANTHOSOMA
 sagittæfolia
YUCCA
 albo-spica
 aloifolia
 variegata
 de Smetiana
 canaliculata
 concava
 filamentosa
 variegata
 quadricolor
 Stokesii
ZAMIA
 Lehmanii
 McKenii.

SELECT HARDY PLANTS SUITABLE FOR SUB-TROPICAL GARDENING.

ACANTHUS
 latifolius
 mollis
 spinosus
ACEE
 negundo variegata
 polymorphum rubrum
 rosea variegata

ALNUS
 glandulosa aurea
ARALIA
 japonica
 papyrifera
 pentaphylla
 Sieboldtii
 spinosa

ARUNDINARIA

falcata

ARUNDO

conspicua

donax

variegata

ASPARAGUS

officinalis

ASPIDISTRA

lurida variegata

BAMBUS

aurea

metake

nigra

CANNAS

many varieties

CHAMEROPS

excelsa

Fortunei

CRAMBE

cordifolia

ERIOPHYTA

japonica

EUCALYPTUS

several species

FARFUGIUM

grande

FERULA

several species

GUNNERA

manicata

scabra.

GYNERIUM

argenteum

variegatum

HERACLEUM

several species

LIGULARIA

Kämpferii argentea

MELIANTHUS

major

PAWLOIA

imperialis

QUERCUS

robur var. concordia

nigra

RHEUM

Emodii

RHUS

various species

STATICE

several species

SYMPHYTUM

officinale luteo marginata

TAMARIX

gallica

THALICTRUM

majus

minor

ULMUS

campestris aurea

punctata

YUCCA

aloifolia

filamentosa

variegata

filifera

gloriosa

glaucescens

pendula

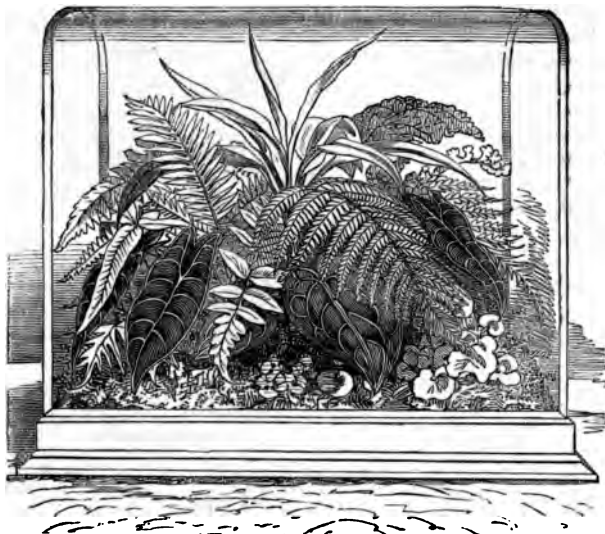
recurva

stenophylla

stricta

Treculeana.

WINDOW PLANTS, AND PLANTS SUITABLE FOR
IN-DOOR DECORATION.



THAT we are very far behind our neighbours in France, Germany, and Belgium, both as regards the style and extent of plant decorations for dwelling-houses, is a fact which we imagine no one will deny ; but we may add, with equal truth, that it is a fact daily becoming less apparent. With the view, then, of hastening the time when we shall have entirely cleared ourselves of this disgrace, we offer a few remarks upon the kinds of plants which are suitable for this purpose, and upon the best mode of using them. It will be well, however, to trace out the cause of this national oblivious-

ness respecting plants as decorators in our apartments, for no surer starting point for reformation can be found than the source of the evil. Our climate is the first thing that suggests itself as a probable cause. We do not, however, intend to declaim against our climate, for as we remarked when treating of sub-tropical gardening, we are inclined to think more highly of it now than at any former period of our lives; but as we are able to cultivate in our gardens such an immense variety of evergreen and other shrubs, far beyond what can be done in the less propitious clime of our neighbours, and as we live in the open air so much amongst them, it is possible that in this way we may have felt, in a much less degree, the necessity for having plants in our dwelling-houses. Again, the decoration of apartments with us, is a far more discouraging affair than with our friends over the water. There they have heat uniformly diffused in their dwellings, without dust or draughts; on our side the channel, however, the rooms are in most cases anything but congenial to plant life, for it is quite possible for plants standing in the windows to be nearly frozen, whilst a cheerful fire is blazing on the hearth. Then we have also to contend against the dust and smoke from our sea-coal fires, which completely choke the leaves of plants, whilst the close stoves of our neighbours do not allow either to penetrate the room, and but little dust or dirt arise from the stoves themselves. In this respect we shall always labour under considerable disadvantages in the decoration of our dwelling-rooms.

But if we search deeper for the source of this neglect, it appears to us that we must lay it to our system of education, and to the consequent lack of that refined taste as a nation, for which other countries have so long

been famed. True we have amongst us individuals who are not wanting in taste and refinement, but it is very lamentable to be compelled to acknowledge our defect in this respect as a nation. This, however, we are glad to say is becoming a thing of the past, and all classes are awakening to a keen appreciation of the fine arts, and to a love of the beautiful, while our schools of design, and other such institutions, are labouring earnestly to elevate and refine our thoughts and senses in every way, being thoroughly alive to our former short-comings. Not the least of the fruits of these efforts, has been the rapid advancement of Horticulture, and a general love of nature. The extended love of Horticulture is not confined to any particular class, but is felt by all, from the highest to the lowest, though it is necessarily carried out in a different degree. Thus, those who have ample sources to draw from, embellish their dwellings with choice ornamental plants, while the artisan, wishing to make his cottage a home of elegance and taste, adorns it also with such plants as lie within his reach. For ourselves, wishing as far as in us lies to assist in the advancement of this work, we offer these remarks as helps to any and all who may be in need of them.

A few years ago, what little window gardening or room decoration was carried on, was done by the aid of flowers only. Such things as Geraniums, Fuchsias, Heliotropes, and a few other summer-blooming plants, formed the chief supply, which was varied in winter by the addition of the Chinese Primula and the Cineraria, thus leaving the apartments empty and dreary just at the time when plants would have been most appreciated. To supply this want, Ferns were first taken into favour, and most elegant decorative agents they are, but unfortunately the

greater portion of them are too delicate in texture to withstand the dry atmosphere which is necessarily maintained in a dwelling-house. To obviate this, miniature greenhouses were invented by Mr. N. B. Ward, an enthusiastic lover of this race of plants, and these have ever since been called "Ward's Cases" or "Wardian Cases," and are most extensively used. Indeed, many large and interesting collections of Ferns are cultivated by amateurs, who have no other accommodation but such as these cases afford, and to whom they thus become a never-ending source of enjoyment. In addition to their adaptability for the cultivation of Ferns, they are eminently suited also for the growth of many of the smaller-growing plants remarkable for the beauty of their leaves, and which, although too fragile to stand in a room unprotected, yet become objects of great interest when grown in such a case as that represented at the head of these remarks. There are several kinds of Orchids which succeed admirably in these structures, and afford much additional interest; we allude to the various species of *Sophranites*, which are adapted for small blocks, to be suspended from the roof; to several species of *Lycaste* and *Odontoglossum*; to the most showy kinds of *Stelis* and *Pleurothallis*, as well as some of the *Maxillarias* and *Cypripediums*.

The florists' flowers which we have previously named as being a few years since the principal objects for indoor decoration, are in our estimation totally unfit to form the chief features in arrangements of this kind, although they are valuable as adjuncts. The groundwork should be composed of ornamental-foliaged plants—plants with a robust constitution, and somewhat stout or coriaceous leaves, examples of which may be found amongst Palms, and the different species of *Dracæna*, *Croton*, *Agave*,

Yucca, *Ficus*, and many other genera. Amongst these the plants in flower should be arranged, with a view to give life to the picture. These latter must, however, be renewed as soon as the blooms are past. *Jardinettes*, and vases for dinner-table decoration, should be filled alternately with leafage and flowering plants, to prevent sameness of appearance.

It has occurred to us, that many would be glad of a little timely advice as to the management of their open air window plants and window boxes; and although these do not come exactly within the meaning of the heading of this chapter, we shall be excused for devoting a little space to this object. Plants grown in pots and in boxes outside windows, are in many instances miserable objects; on the other hand, many persons succeed in maintaining a gay and varied display in them nearly all the year round, which is ample proof that it is possible to do so if proper selections are made, and sufficient care and attention are bestowed. *Ivies* of various kinds have a beautiful appearance when trained neatly round the window, and form an elegant framework for the plants, besides having a cheerful aspect during the dull winter months. During summer they may be removed if desirable, and such plants as *Pilogyne suavis* (German Ivy), *Cobæa scandens variegata*, *Hardenbergia monophylla*, and various other plants used in their place. One of the most beautiful window arrangements we ever saw, was a framework of Ivy upon which was trained *Clematis Jackmanni*; another consisted of *Clematis lanuginosa candida*, upon the same background. These and many other varieties of this genus cannot be surpassed for this purpose; we must, however, in passing, remind our readers that they will require occasional applications of

weak artificial manure to prevent them becoming exhausted—an occurrence which would only lead to disappointment and loss of time.

In the summer season window boxes should never be without a few plants of Mignonette, as its delicate fragrance is not surpassed by that of any other flower. This can be easily accomplished by dropping a few seeds upon the soil every three or four weeks, so that young plants may take the place of older ones, which may be robbing the other occupants of their space. One or two plants with ornamental leaves should be placed in each box, and the remaining space should be filled up with flowering plants according to the available supply. As the plants become shabby, they should be removed to the store ground, and their places be filled up by others. To enable the amateur to make this style of gardening more interesting and attractive than it has hitherto been, we append a list of hardy flowering plants suitable for window decoration. In leaving this subject with these brief remarks, we may add, that if the growth of spring bulbs is attempted, a double set of boxes will be needed, so that the bulbs may be planted in autumn, covered with ashes or other protecting material, and not brought into position until tolerably advanced; this arrangement will allow the windows to be decorated with a few flowers and ornamental plants during even the depth of winter.



A SELECTION OF ORNAMENTAL-LEAVED PLANTS SPECIALLY
ADAPTED FOR THE DECORATION OF APARTMENTS, HALLS,
CORRIDORS, &c.

Those marked with an asterisk () do not require fire heat during winter.*

ACACIA
 lophantha
ACALYPHA
 Wilkesiana
AGAVE
 Americana*
 medio-picta*
 striata*
 variegata*
 filifera*
 geminiflora*
 lophanta*
 Verschaffelti
 many other varieties
ANANASSA
 sativa variegata
ANTHURIUM
 acaule
 cartilagineum
 leuconervum
 magnificum
 regale
ARALIA
 crassifolia
 heteromorpha
 pentaphylla
 reticulata
 Sieboldti*
 variegata*
 trifoliata
ARAUCARIA
 Cookii*
 Cunninghamii
 glauca
 excelsa
ARECA
 Madagascariensis
 monostachya
 rubra

BEAUCARNEA
 glauca
 recurvata
BREXIA
 Madagascariensis
CALADIUM
 many varieties in summer
CARLUDOVICA
 palmata
 rotundifolia
CARYOTA
 furfuracea
 sobolifera
 urens
CAROLINEA
 princeps
CEROXYLON
 andicola
CHAMÆDOREA
 Arenbergii
 Desmoncoides
 elegans
 Ernesti-Augustii
 glauCIFolia
 graminifolia
 Hartwegii
 Warszewiczii
 Wendlandii
CHAMEROPS
 arborescens*
 excelsa*
 Fortunei*
 humilis*
 macrocarpa*
Cocos
 australis
 plumosus
CORDYLIN
 indivisa

- CROTON**
 angustifolium
 pictum
 variegatum
CYCAS
 revoluta*
DACRYDIUM
 cupressinum*
DASYLIRION
 acrotichum*
 brevifolium*
 glaucum
DRACENA
 australis
 braziliense
 cannæfolia
 congesta
 Cooperii
 Draco
 ferræa
 gracilis
 lineata
 nigrescens
 robusta
 terminalis
 Veitchii
FIGUS
 Brassii
 Cooperii
 elastica*
 macrophylla
 Suringarii
HIPPOMANE
 spinosa
JUBEA
 spectabilis*
KENTIA
 Bauerii
 sapida
LIVISTONA
 altissima
 australis
 borbonica
 humilis
 Jenkinsii
MONSTERA
 deliciosa
- MUSA**
 chinensis
OREODOXA
 oleracea
OREOPANAX
 dactylifolia
PHORMIUM
 tenax*
 variegatum
PANDANUS
 elegantissimus
 utilis
 Vandermeerschii
PHILODENDRON
 crinipes
 pinnatifidus
RHOPALA
 corcovadensis
 Skinnerii
RHAPIS
 flabelliformis
 humilis
SABAL
 Blackburniana
 umbraculifera
SACCHARUM
 officinarum
SEAFORTHIA
 elegans
STRELITZIA
 angusta
 reginæ
THEOPHRASTA
 imperialis
 Jussienii
 latifolia
THEINAX
 Martii
 parviflora
 radiata
TUPIDANTHUS
 calyptratus
YUCCA
 albo spica
 aloifolia variegata*
 filamentosa variegata*
 quadricolor
 Stokesii.

**SELECT ORNAMENTAL-LEAVED PLANTS FOR DINNER-TABLE
DECORATION.**

****These plants should be grown with care, and in as small pots as possible, to admit of their standing in small vases, &c.*



ALOCASIA
gigantea
Lowii
ARALIA
leptophylla
reticulata
ARAUCARIA
excelsa

ARECA
aurea
lutescens
madagascariensis
monstachya
rubra
BANKSIA
speciosa

CALANUS		LATANIA	
asperrimus		Commersonii	
ciliaris		Verschaffeltii	
elegans		LIVISTONA	
plumosus		altissima	
CARYOTA		borbonica	
Cunningii		MALORTIEA	
furfuracea		simplex	
CHAMÉDOREA		MORENIA	
elegans		corallina	
Geonomiformis		ONCOSPERMA	
glaucofolia		Van Houtteana	
graminifolia		OREODOXA	
Warscewiczii		regia	
Wendlandii		PANDANUS	
COCOS		elegantissimus	
schizophylla		utilis	
Weddeliana		PHŒNIX	
CROTON		dactylifera	
angustifolium		sylvestris	
irregulare		tenuis	
variegatum		RHAPIS	
CYANOPHYLLUM		flabelliformis	
magnificum		humilis	
CYPERUS		SEAFORTHIA	
alternifolius variegatus		elegans	
DRACÆNA		SONCHUS	
Cooperii		laciniatus	
gracilis		pinnatifidus	
Guilfoylei		STADMANNIA	
lineata		Jonghii	
nobilis		TERMINALIA	
regina		elegans	
terminalis		THEINAX	
Veitchii		parviflora	
FREYGINETIA		radiata	
imbricata		WELFIA	
GREVILLEA		regia	
robusta		ZALACCA	
		edulis.	

SELECT ORNAMENTAL-LEAVED PLANTS WHICH SUCCEED WHEN
PLANTED IN A WARDIAN CASE, MIXED WITH FERNS, &c.

ALOCASIA	FITTONIA
Jenningsii	argyroneura
Lowii	gigantea
metallica	Pearcei
ANTHURIUM	Verschaffeltii
leuconervum	HIGGINSIA
magnificum	argyroneura
Scherzerianum	pyrophylla
BERTOLONIA	refulgens
guttata	MARANTA
CEPHALOTUS	illustris
follicularis	Lindeniana
CHAMERANTHEMUM	lineata alba
Beyrichii	rosea
verbenaceum	micans
CYPERUS	ornata
alternifolius variegatus	rosea picta
DICHORIZANDRA	splendida
undata	Van den Heckei
DIEFFENBACHIA	vittata
Baraquiniana	PEPEROMIA
Pearcei	argyrea
Weirii	argentea
DIONÆA	SARRACENIA
muscipula	Drummondii
DORSTENIA	alba
argentata	flava
maculata	psittacina
DRACENA	purpurea
any kinds	rubra
DROSERA	variolaris
capensis	SCINDAPSUS
dichotoma	pictus
spathulata	SONERILA
ERANTHEMUM	margaritacea.
igneum	
sanguinolentum	

SELECT HARDY ORNAMENTAL-LEAVED PLANTS SUITABLE FOR
WINDOW DECORATION IN THE OPEN AIR.

AMPELOPSIS	CHAMÆROPS
japonica	excelsa
Veitchii	Fortunei
ARABIS	COLLETIA
lucida variegata	horrida
ARALIA	ECHEVERIA
japonica	secunda
Sieboldtii	glauca
ASPIDISTRA	EUONYMUS
lurida variegata	japonica argentea variegata
punctata	aurea variegata
AUCUBA	radicans
himalaica	EURYA
japonica albo variegata	japonica variegata
latimaculata	FARFUGIUM
maculata	grande
elegans	HEDERA
variegata elegans	many species and varieties
viridis (vera)	OPUNTIA
acuminata	Rafinesquiana
BAMBUA	OSMANTHUS
Fortunei variegata	ilicifolius variegatus
gracilis	POLEMONIUM
metake	caeruleum variegatum
nigra	REINECKIA
BUXUS	carnea variegata
balearicus	SANTOLINA
CASTANEA	incana
chrysophylla	SEMPERVIVUM
CERASTIUM	californicum
tomentosum	tectorum
	many species
	STACHYS
	lanata.

SELECT HARDY FLOWERING PLANTS SUITABLE FOR WINDOW
DECORATION IN THE OPEN AIR.

ALYSSUM	ARABIS
saxatile	lucida
ANDROMEDA	AUBRIETIA
formosa	Campbellii
ARABIS	purpurea
albida	

- AZALEA**
amcna
BERBERIDOPSIS
corallina
CAMPANULA
many species
CLEMATIS
azurea grandiflora
flammula
Jackmanii
lanuginosa
candida
rubro violacea
Standishii
venosa
DAPHNE
cneorum
ponticum
DESFONTAINEA
spinosa
DEUTZIA
crenata fl. pl.
gracilis
EPIMEDIUM
pinnatum
rubrum
FABIANA
imbricata
FORSYTHIA
viridissima
FUNKIA
many varieties
HYDRANGEA
hortensis
japonica
IBERIS
sempervirens
JASMINUM
nudicaule
revoluta
KALMIA
latifolia
several species
LITHOSPERMUM
fruticosum
NIEEMBERGIA
rivularis
- ORCHIS**
all the British species
OSMANTHUS
ilicifolius
variegatus
PANSY
many varieties
PERNETTYA
floribunda
mucronata
PHLOX
procumbens
subulata
PRIMULA
cortusoides amcna
alba
grandiflora
PYRUS
japonica
RIBES
sanguinea
SAXIFRAGA
many species
SERISSA
fetida marginata
SPIREA
callosa
japonica
palmata
STATICE
many species
TRICYRTIS
hirta
TRILLIUS
europæus
VERONICA
prostrata
VIBURNUM
tinus
VIOLA
lutea
cornuta
alba
perfection
WEIGELA
amabilis
rosea.

HORTICULTURAL EXHIBITIONS.

N this concluding chapter we purpose saying a few words upon horticultural exhibitions. We have been connected with these public exhibitions for many years, and we are fully impressed with their utility and beneficial influence upon horticulture generally. A difference of opinion in this respect has sprung up recently, and a few visionary articles have been written, which prove nothing but want of knowledge and bad taste on the part of the writers. It is a fact beyond dispute, that horticultural societies throughout the three kingdoms have been the means of promoting the science of horticulture, and to their influence, fostering care, and encouragement, is due the introduction of the many plants which now ornament our stoves and green-houses, as well as the open air—both of those yielding fine flowers and ornamental foliage. Such subjects as these, when brought together at an exhibition, and made to form the basis of a gorgeous display, impress the enthusiastic beholders with a love for plants, and many of our leading amateurs have assured us, that these floral displays were the means of first instigating them to become horticulturists.

Having for many years been constant visitors at these shows, and taking an active part in these displays, both at home and abroad, we have been able to judge practically of the progress these have been the means of producing in plant cultivation, and in the effective grouping of plants, also in regard to the great variety of objects brought for public competition. Being fully alive to all this, it has necessarily caused us extreme regret to see the backward

tendency displayed by our Metropolitan Horticultural Societies during the present season; for just at the time when we have become fully aware of our error in devoting our whole energies to produce flowers only, to the utter neglect of plants of elegant forms and beautiful leaves, and are earnestly endeavouring to retrieve this error, and when too we are introducing these plants largely for the decoration of our gardens in the open air, the societies have totally withdrawn their encouragement for the production of them; and by their silence respecting them—by their not asking for plants remarkable for the beauty of their foliage to grace their exhibitions, they seem to ignore the existence of grand specimen plants, whether ornamental in foliage or flowers. How such a state of things has originated it is difficult to say, but of this we are fully assured—that the exhibitions without these fine ornamental-leaved plants will be miserable in the extreme. What lent the great charm to the great London and Paris International Flower Shows, but the elegant Tree Ferns, and those of humbler growth, the noble Palms and Musas, besides the vast quantities of other ornamental-leaved plants there brought together? The various shades of green and variegated leaves formed an agreeable contrast with, and served to enhance the beauty of, the masses of bloom staged with and around them, and what would these exhibitions have been without such plants? Again, what is it that causes all visitors to plant exhibitions upon the Continent to pronounce them finer than our own? It certainly is not their grand Heaths or New Holland Plants, for such things are not well grown by continental cultivators; neither is it their magnificent stove flowering plants and Azaleas, for with these we are infinitely their superiors; but it is through the

quantity of Ferns, Palms, and ornamental leafage generally introduced, and which is judiciously arranged with their somewhat inferior flowering subjects. These materials being grouped for effect, the appearance produced is most enchanting, such as we have never yet equalled. This is the only reason that all reporters receive a more favourable impression abroad than at home. Yet such as these are the very plants that are to be banished, as specimens, from our Flower Shows in the Metropolis! Let us vainly hope that those who perpetrate such barbarisms—who thus try, as it were, to hurl horticulture back into its dark ages, may speedily see the error of their ways. They manage these things far better in the provinces, and the authorities of such centres of horticulture as Manchester, Leeds, and York, are too well aware, and appreciate too well the effect large ornamental-leaved plants produce, to ever think of discarding them from their exhibitions. At the same time, they are fully as well aware that the mill-operatives and mechanics are great admirers of beautiful leaved plants, as well as of flower, and to banish either section from their great Whit-week display, would not only cause wide-spread dissatisfaction, but would tend materially to diminish their exchequer, for it must be borne in mind that at the provincial flower shows the working classes constitute a great portion of the visitors. Many of them are enthusiastic botanists and amateur horticulturists, and it is a rich treat to which they anxiously look forward, and one that enables them to refresh their memories and gladden their sight with the beautiful works of nature, of which to a great extent their daily occupation deprives them. We say long may such societies flourish—and flourish they must and will, whilst their efforts all tend towards the education and elevation of the *masses*, which is the noblest aim of life.

A SELECTION OF
STOVE AND GREENHOUSE PLANTS

REMARKABLE FOR THE BEAUTY OF THEIR LEAVES.

HE plants we here describe, and which we recommend to the notice of plant growers, will all be found worthy of general cultivation, and of great beauty, distinctness and sterling merit having been our qualification test in the selection. Many more species and varieties could have been included, but we believe the amateur and gardener will find ample material to supply their wants, whether they require examples for the embellishment of the stove or greenhouse, the drawing room, dinner table, or the sub-tropical garden in the open air.

ABUTILON.

This Malvaceous genus affords only one example of sufficient note to be entered here as a fine foliage plant, and that one is quite a gem. It can be easily grown, and is quite at home in any situation in which it may be *placed*, but displays its elegant variegation to the greatest *advantage* in the open air during the summer, thus.

affording quite a distinct and novel combination of colour for the flower gardener. The soil best suited for the cultivation of *Abutilons* is rich light loam, adding a small quantity of leaf mould and sand. Increase by cuttings, which are best taken off during the summer season.

A. Thompsoni.—A free-growing twiggy variety of *A. striatum*, producing medium-sized lobed leaves of a vivid green, elegantly blotched with creamy white and yellow. It is a very handsome plant for greenhouse decoration if fully exposed to the sun's light, and as a bedding plant it is quite unique; no garden should lack this charming variety. Native of Jamaica.

ACALYPHA.

This genus belongs to the *Euphorbiaceæ*, an order which gives us many very finely variegated and ornamental-leaved plants. Amongst the species of this particular genus, however, the one here given is the only example which we can recommend to the notice of amateurs. Potted in peat and loam, with a portion of sand added, and placed in good stove temperature, this plant will make a fine ornamental object, especially in winter, when it is strikingly conspicuous, and is very serviceable at that season to decorate the dinner table. It is increased by cuttings in spring.

A. Wilkesiana.—A very handsome and distinct plant, growing from six to ten feet in height, forming a small shrub; the leaves are large, ovate-acuminate in shape, and most curiously blotched, mottled, and splashed with red and crimson upon a coppery green ground. It should be in every collection, however limited. It is better known, perhaps, by the name of *A. tricolor*. Native of New Caledonia.

ACANTHOPHœNIX.

A small genus of Palms nearly allied to *Areca*, but having, however, several characters which do not accord with that genus. The stem is stout, especially towards the base; the flowers are arranged spirally upon a simple spadix, one female flower being always placed between two males, and the fruits are small and one-seeded. The leaves of *Acanthophœnix* are pinnate, and the petioles are profusely clothed with long spines, which is alone sufficient to distinguish them from *Areca*, because no true *Areca* is furnished with spines.

These plants form beautiful ornaments in our stoves, and should be grown in two parts peat, one part loam, and one part sand, well mixed together. They should at all seasons be liberally supplied with water, and kept in the temperature of an ordinary stove. As these plants do not produce suckers, they can be increased by seeds only.

A. crinita.—This species has been distributed under the erroneous name of *Calamus dealbatus*, but is, perhaps, better known as *Areca crinita*, under which title it has long existed in choice collections of plants in this country. The leaves are pinnate, and beautifully arched, the petioles sheathing at the base, and profusely armed with long sharp black spines; pinnæ long, narrow, and pendent, light yellowish green on the upper side, silvery white beneath. It is a superb plant, well deserving general cultivation. Native of the Mascareen Islands.

A. ruber.—The habit of this plant is similar to that of the preceding, the leaves are, however, longer, and in the young state deep red, which changes with age

to dark green, and the petioles are less densely clothed with spines. A beautiful plant. Native of the Mascareen Islands.

ACANTHORRHIZA.

This is a small group of Palms, the species included in which have been, until recently, merged in the genus *Chamærops* and *Thrinax*; from these genera, however, they have been removed, and their differences, in a botanical point of view, have been deemed sufficient to elevate them to generic rank. The chief and most striking distinction for the cultivator, will be found in the remarkable manner in which their palmate leaves are divided into segments, quite down to the ligule, or place of insertion at the apex of the petiole. These plants are extremely ornamental, and form beautiful objects, in a young state, for the decoration of apartments, or as table plants, and when they have become too large for such purposes, they are admirably adapted for the conservatory. Pot them in loam and peat, in about equal parts, adding a little clean river or silver sand, drain the pots well, and supply them liberally with water.

A. stauracantha.—A beautiful plant, well deserving general cultivation. The stem is medium-sized, and from below the base of the petioles, produces a quantity of roots which ultimately become spiny, and which has given rise to the generic name; the leaves are palmate, divided into segments quite down to the ligule, dark green on the upper side, and silvery white below. It is a beautiful Palm for in-door decoration, as well as for greenhouse purposes. Native of Mexico.

A. Warscewiczii.—The stem of this fine species is somewhat stout; petioles from two to three feet long, unarmed,

and enclosed in a dense mass of white fibres; leaves nearly round, about two feet in diameter, and like those of the preceding species, often split into segments quite down to the ligule; the upper surface is very deep green, below they are clothed with a white pulverescence. Native of Central America.

AGAVE.

Although these plants would not seem at first sight to have much in common with *Amaryllis* and *Narcissus*, they nevertheless belong to the same order (*Amaryllidaceæ*). They are noble massive-growing plants, and form magnificent ornaments in the greenhouse or conservatory, whilst from their slow growth they do not rapidly get too large, even for a small greenhouse. Indeed, some of the real gems of this genus are neat compact-growing plants, seldom exceeding two feet in height. Besides being fine ornamental plants for in-door decoration, the larger-growing kinds are unquestionably the finest objects for the embellishment of terrace walks, or surmounting flights of steps in the open air during the summer season, and also for plunging in rock-work, or about any rustic nooks in the pleasure grounds, as in such situations they are quite in keeping, and thrive admirably. The *Agave americana* and its varieties (American Aloes as they are popularly called), are many of them familiar plants, and bear the character of blooming only once in a hundred years. This seems extraordinary, but is to some extent true, for they attain maturity very slowly, but when this condition is reached, the plant sends up a flower spike, and after perfecting this dies, on account of the flower stem being the terminal bud, and from its great size completely exhausting the plant. It would, therefore, be equally true to assert



AGAVE HORRIDA.

Mexico.

that they bloom only once in a thousand years, but to imagine that they require to grow a hundred years before flowering is certainly fallacious, although they are no doubt many years in arriving at a flowering state. There is, however, another section of this genus, distinct from the *americana* group, which do not exhaust themselves in their efforts to reproduce their species, but even with these the symmetry of the plant is gone, and in some cases they never recover. The *Agaves* contain an immense quantity of strong and valuable fibre, but on account of their slow growth, it cannot be produced in sufficient quantity to become an article of commerce.

These plants succeed well potted in good loam and river sand, to which may be added a little peat and leaf mould for some of the smaller-growing kinds. The drainage should be good, as they enjoy a liberal supply of water during the summer season, but during winter considerably less will be required. When these plants are syringed in winter, the temperature of the house should be increased, to quickly dry up the superabundant moisture. The species can be increased by suckers when they are to be obtained, and also by seeds, to secure the production of which, in the species that do not yield suckers, the flowers should be carefully impregnated.

A. americana.—This noble plant produces leaves from one to seven or eight feet in length, and six to eight inches in breadth, very stout, spreading, distantly armed at the margins with moderate-sized spines, and at the points with a very long and stout one. The colour of the massive leaves is milky green. It is a native of South America.

A. americana medio-picta.—This is a superb variety of the preceding, with lanceolate leaves from two to three

feet in length, and about four inches in width, the lower leaves recurved, the upper ones erect, moderately thick, rich golden yellow on both surfaces, bordered with dark green; the apex and edges are armed with brown spines. It is a magnificent plant, and one which no collection of ornamental-leaved plants should lack. Native of Mexico.

A. americana mexicana.—This variety is much shorter in the leaves than the species, seldom exceeding three feet in length by some four or five inches in breadth, and very glaucous; armed like the original, with somewhat distant spines, and at the apex with a stout one. Native of Mexico.

A. americana striata.—A more compact-growing plant than the species; the ground colour is a milky green, with streaks of yellowish white extending from base to apex. Although far less handsome than *A. medio-picta*, this plant forms a beautiful contrast with it. Native of Mexico.

A. americana variegata.—Another handsome plant. The leaves are some six feet or more in length, and six or eight inches in breadth, dark green in the centre, broadly margined with rich yellow, and armed on the edges and at the apex with stout spines. Native of Mexico.

A. amoena.—A beautiful compact-growing, yet massive plant. The leaves are thick and fleshy, some three feet long, and from six to eight inches broad, armed at the point with a formidable terete red spine, and at the edges with large flat recurved ones the same colour; leaves on both sides rich full green. The plant is also known by the name of *A. elegans* in some gardens. Native of Mexico.

A. applanata.—A compact-growing handsome plant, the leaves of which are about a foot in length, broad, and very thick and massive at the base, tapering to a

sharp point, where they are armed with a long and sharp brown spine; they are blue green in colour, bordered with brown, and armed at the edges with brown spines. Native of Mexico.

A. aureoacantha.—A pretty compact-growing plant. The rosulate leaves are spatulate, and very glaucous, about six inches in length and two and a half in breadth, the apex and margins armed with golden spines. Native of Mexico.

A. Besseriana amœna.—This is an extremely rare plant, but without exception one of the very handsomest of the small-growing set. The leaves are oblong, arranged in a compact rosulate manner, about three inches in length, and one in breadth; stout, creamy white, armed at the edges with broad brown spines, and terminated with a stout black one an inch long; the contrast of the creamy white leaves and dark spines is very remarkable and pleasing. Native of Mexico.

A. Besseriana candida.—Leaves stout, oblong, compactly arranged in a rosulate manner, and milky green, some six inches long and one inch broad, armed at the point with a dark brown spine an inch in length, and with a few smaller ones at the edges; a larger-growing plant than the variety *amœna*, not so creamy white in colour, but very distinct, and equally beautiful in its own way. Native of Mexico.

A. Celsiana.—A beautiful species, the stem of which scarcely rises off the surface of the ground. The leaves are from one to two feet long, obovate-lanceolate, tapering to a sharp point, and having the margins armed with numerous short brown spines. The colour of the leaves is a very pale glaucous green, rendering the plant a conspicuous object in a collection of succulents. Native of Mexico.

A. coccinea.—The leaves of this species are very massive at the base, which separates them widely, and gives to the plant a somewhat thin appearance; they are recurved, some two or three feet in length, and about three inches in breadth, of a deep heavy green, and armed at the margins and apex with red spines; the latter are very formidable, being often three inches long. Native of Mexico.

A. coccinea brevifolia.—This differs from the preceding in its shorter leaves, which seldom exceed eighteen or twenty-four inches in length, and some five or six in breadth; they are thick and fleshy, very dark green, and armed at the apex and margins with stout reddish brown spines. Native of Mexico.

A. Corderoyi.—Leaves erect, about a foot long, and an inch broad, armed at the apex with a very stout dark brown spine, and at the edges with a few small distant ones of the same colour. It is a very pretty plant, and named after an enthusiastic amateur cultivator of this order. Native of Mexico.

A. cuspidata.—This is an extremely elegant species. The leaves are spatulate, slightly recurved, from six to eight inches in length, and two in width, dark green, the apex armed with a formidable reddish brown spine an inch long, and the edges with smaller recurved ones of a similar colour. Native of Mexico.

A. dasylirioides.—A very handsome plant, but totally distinct from the plant which has in many instances usurped the name. The leaves are similar to those of *A. dealbata*, but the plant is more erect in its growth, and the leaves are of a rich dark green colour, with a few greyish lines running up them, and in addition are armed at the apex with a dark brown sharp spine. Native of Mexico.

A. de Smetiana.—This is one of the finest species in cultivation, and extremely rare. The rosulate leaves are somewhat ovate, bright green, margined with a broad band of light brown, upon which are set large reflexed spines of the same colour; the apex is armed with a very long and stout brown spine. Native of Mexico.

A. dealbata.—This very rare, distinct, and handsome plant makes little or no stem. The leaves are some three and a half feet long, or in some instances more, and about an inch and a half broad, sharply toothed on the margins, and glaucous green in colour, those in the centre being erect, while the lower ones are recurved. The flower spike attains the height of nine or ten feet, the upper portion on which the flowers are placed being pendulous; the flowers are green, with reddish brown anthers. This species has thrown up a sucker from its base on each occasion of its flowering in this country, which is unlike the habit of the generality of the species belonging to the genus. It has been figured and named *A. dasyliroides* by mistake. Native of Mexico.

A. densiflora.—Leaves spreading, moderately stout, some two or three feet in length, and four inches in breadth, obovate-lanceolate in shape, sometimes, especially in a young state, inclined to spatulate, dark green, terminating in a stout dark red spine, and armed with small closely set red or black ones at the edges. Native of Mexico.

A. Ellemetiana.—Leaves stout, somewhat spatulate, and recurved, from two to three feet long, four or five inches across in the widest part, and deep green in colour. It is a very handsome plant, and peculiar from being totally unarmed either at the edges or at the apex. Native of Mexico.

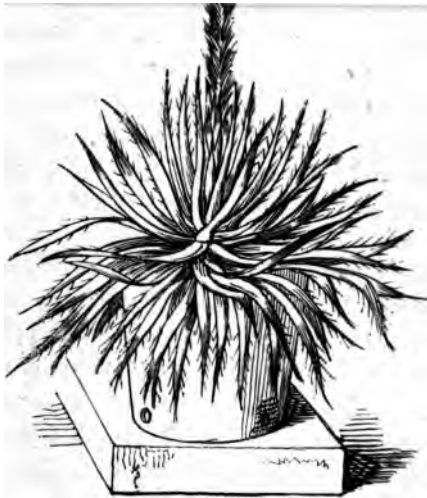
A. ensiformis.—This is a beautiful plant. The leaves are very numerous and dense, from six to twelve inches in length, scarcely half an inch in breadth, flat on the upper side, rounded below, glaucous green in colour, plain at the edges, but armed at the apex with a long bright red spine. Native of Mexico.

A. ferox.—Leaves spatulate, very thick and massive, of a dark heavy green colour, and armed at the edges and apex with stout dark brown spines. Native of Mexico.

A. filamentosa.—The leaves of this plant are from one to one and a half feet in length, and about one and a half inches in breadth, tapering to a point, where they are armed with a stout straight spine; in colour they are light green, quite unarmed at the edges, but clothed with long filaments. In general appearance this plant is very like the next species, but it appears to have longer and more oblique leaves, which are far less densely clothed with filaments. When it blooms, it produces an erect flower stem, some twelve feet in height. Native of Mexico.

A. filifera.—This is a more compact-growing plant than the preceding. The leaves are erect, about a foot in length, and an inch or an inch and a half in breadth, tapering to a point, and armed with a stout brown spine, dark green in colour, and densely clothed with broad white filaments. A very handsome dwarf compact plant, very suitable for even quite small collections. Native of Mexico.

A. fourcroyoides.—This is one of the most distinct species with which we are acquainted. The leaves are erect, or but slightly spreading, fleshy, very glaucous, about six feet in length, and three inches wide, tapering



AGAVE FILIFERA.

Mexico.

to a point, where they are armed with a long brown spine; the base is broad and sheathing, and the edges distinctly armed with brown spines. Native of Mexico.

A. Galeottii.—This is a very pretty species, with the leaves arranged in a compact rosulate manner; they are from six to twelve inches in length, and some three or four in breadth, dark green, slightly glaucous, armed at the edges and apex with stout dark almost black spines. Native of Mexico.

A. geminiflora.—This plant is most erroneously named in many gardens *Bonapartea juncea*, for *Bonapartea* is a Bromeliaceous plant. It is also frequently found, and more correctly, under the name of *Littæa geminiflora*; but we have included it with the *Agaves*, with which it is generally associated. The leaves are smooth, narrow, unarmed at the edges, the lower ones recurved, the upper ones erect, from two to three feet in length, and very dark green in colour. It forms a compact handsome plant. Native of South America.

A. geminiflora filifera.—In all respects resembling the preceding, except that the leaves are somewhat profusely clothed with long white filaments; it is, therefore, easily distinguished. It is frequently obtained from seeds of *A. geminiflora*, and, consequently, can only be a variety of that plant.

A. Ghiesbreghtii.—A distinct and fine plant. The leaves curve inwards slightly, and are of a dark bright green colour, bordered with red, and armed at the edges and point with large bright red spines. Native of Mexico.

A. glaucescens.—This species rises with age upon a stem some six feet in height. The leaves are from two to two and a half feet in length, and about eight inches across in the widest part, somewhat spatulate, tapering

to a point, very glaucous on both sides, and quite destitute of spines either at the apex or margins. Native of Mexico.

A. Hookeri.—An extremely rare species, a fact which is much to be regretted, for it is a noble plant, peculiarly attractive amongst a collection of this genus, on account of its massiveness. The leaves are spatulate, recurved at the apex, from four to five feet in length, and six to eight inches across in the widest part; they are very thick and fleshy, light green, in a young state slightly glaucous, deeply lobed at the edges, and each lobe is armed with a large flat brown spine, and the apex with a long, terete, and very stout one. Native of Mexico.

A. horrida.—A small-growing dwarf species, with broad, oval-lanceolate, concave leaves, about four inches long, and nearly two inches broad, rosulate, of a lively green, terminating in a long stout dark coloured spine, the margins also bearing large irregular hooked spines. Native of Mexico.

A. horrida lævior.—This resembles the foregoing, but has somewhat longer narrower leaves, with the marginal spines less strongly developed, and of a paler colour. It was introduced with *A. horrida* itself from Mexico.

A. Humboldtiana.—Leaves erect, moderately stout, some three or four feet long, broad in the centre, tapering at each end; apex very acuminate, ending in a stout reddish brown spine, and the margins armed with very minute closely set ones of the same colour. It is a handsome and distinct plant; very desirable. Native of San Luis Potosi.

A. hystrix.—This species is evidently nearly allied to *A. ensiformis*, the leaves are, however, somewhat pendulous and semiterete, longer, narrower, thicker at the base, and



AGAVE HORRIDA LÆVIER.

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not so dense as in that plant; apex armed with a red spine. Native of Mexico.

A. Jacobiana.—This is a superb plant, with leaves upwards of two feet in length, and some six inches in breadth, thick and massive, and very much incurved at the apex, blue green in colour, armed at the point with a long stout terete spine, and at the edges with large flat somewhat recurved ones. Native of Mexico.

A. Jacquiniiana.—This amongst grand and noble plants is unequalled. It may be said to have somewhat the style of *A. americana*, but is totally distinct. It produces more leaves in a whorl than *A. americana* does, and as they are not so thick at the base, they are consequently set much closer together, in addition to which, fully half of them stand erect, which gives the plant a more noble aspect. The leaves are some four feet in height, and six inches in breadth, saving at the base where they spread, and the acuminate apex; the upper leaves are erect, the lower ones spreading, all glaucous green, armed at the point with a stout brown spine, and at the edges with white, or sometimes faint red ones, but much smaller. Native of Honduras.

A. Karatto.—This is a handsome strong-growing plant. The leaves are somewhat spreading and incurved, about four feet long, and some three or four inches wide about the centre, where they are widest, pea green in colour, the spines on the margins small, and reddish brown, whilst the terminal one is stout and of the same colour. Native of Tropical America.

A. Kellockii.—This is one of the most distinct, and at the same time most beautiful of the genus. The habit is compact and erect, spreading gracefully with age; leaves from three to four feet in height, and two to four inches

in breadth, very glaucous on both surfaces, armed at the apex with a long, stout, black spine, and clothed at the margins with small closely set white teeth. We found this as a unique plant at Stamford Hill, Middlesex, in the beautiful collection of the enthusiastic and generous amateur whose name it bears. Native of Jalapa, Mexico.

A. Kerchovei brevifolia.—A handsome and distinct plant; leaves broad at base, tapering to a point, where it is armed with a stout white spine some two inches in length; the margins are bordered with white, bearing long, somewhat distant, recurved spines; ground colour light green, striped up the centre with a very pale shade of the same. Native of Mexico.

A. Leopoldii.—A superb plant; leaves rosulate and compact, light green, six to ten inches in length, and two to three in breadth at the base, bordered with light brown, armed at the edges with obtuse spines, and terminated by a very long and stout dark brown one. Native of Mexico.

A. longifolia.—The leaves of this species are extremely narrow, from two to four feet in length, convex below, flat above; dark green, spreading, and recurved; whole plant destitute of spines. Native of Mexico.

A. lophanta.—Leaves from two to three feet in length, and about two inches in width at the base, gradually tapering to the point, where they end in a red spine. The ground colour is dark green, with a faint band of greenish yellow up the centre; they are edged with pure white, upon which are scattered a few small white spines. Native of Mexico.

A. lophanta rubro-spina.—This is usually found in collections without any distinct name, but although it is evidently but a variety of *A. lophanta*, it is sufficiently

distinct to merit attention. The present plant produces longer leaves, which are also more oblique, but the chief difference lies in the borders and spines, which instead of being white, are much longer and deep red. Native of Mexico.

A. macroacantha.—Leaves somewhat erect, and arranged in a compact rosulate manner, stout and fleshy, slightly incurved at the margins, and very glaucous, from three to six inches in length, and about one in breadth, terminated by a very long black spine, and armed at the edges with large flat ones of a similar colour. This is a very beautiful small-growing kind. Native of Mexico.

A. Maximiliana.—Leaves about eighteen inches in length, and two in breadth, spreading, dull glaucous green, lobed at the edges, the lobes armed with large flat and broad light brown spines, which are frequently forked; the apex is also armed with a long terete spine of the same colour; a very distinct species. Native of Mexico.

A. mitriformis.—The leaves of this plant are very massive, from eighteen to twenty-four inches in length, and four in breadth, very dark heavy green, the edges and point set with stout dark brown spines. It is a noble plant, and when contrasted with some of the glaucous kinds, very effective. Native of Mexico.

A. Noackii.—A most distinct and extremely rare plant. Stem slender; leaves thick and fleshy, strap-shaped, tapering to a point, recurved, from two to three feet long, and three to four inches in breadth at the widest part, deep green, with a central stripe of greenish white, the edges furnished with very fine close set teeth. Native of Mexico.

A. Ousselghemiana.—A distinct and very handsome

plant, with somewhat oblong leaves, which suddenly become contracted and taper to a point, where they are armed with a long sharp brown spine, but are quite smooth at the edges; the apex is curved upwards, and both surfaces are very glaucous. Native of Mexico.

A. picta.—Leaves very long and narrow, being from two to three feet in length, and seldom exceeding two and a half inches in breadth, pendulous, deep green in the centre, bordered with a broad stripe of white, and armed at the edges with small red spines, the apical one is very long and stout. Native of Mexico.

A. picta brevifolia.—This differs from the preceding in having shorter leaves, which, as a consequence, are not so pendulous; the marginal band is broader, and suffused with golden yellow. It is a very desirable form. Native of Mexico.

A. Poselgeri.—This is a very distinct and handsome plant. The leaves are from six to twelve inches in length, light green, with a broad central white stripe extending from base to apex, where it is armed with a stout brown spine, those at the edges being flat and recurved. Native of Mexico.

A. potatorum.—A massive and noble plant, producing very thick broad spatulate leaves, which are from two to three feet in length, and six inches or more in breadth, very dark green in colour, deeply lobed at the edges, and armed upon each lobe with a very large flat dark brown spine, and at the apex with a long stout round one. Native of Mexico.

A. pugioniformis.—A dense handsome-growing plant, with erect dark green leaves, which are in some cases slightly glaucous; they are from twelve to twenty inches

in length, and one to one and a half in breadth, and armed at the edges with long recurved white spines. Native of Mexico.

A. revoluta marginata.—Leaves from one to two feet in length, and about three inches in breadth at the widest part, finely serrated at the edges, and armed at the point with a stout spine; the leaves are soft in texture, and altogether different from the *americana* group, dark green in the centre, bordered with dull orange yellow. Native of Mexico.

A. rigida.—This is a graceful-growing species, forming a dense crown, and producing pendulous leaves from three to six feet in length, convex on both sides, very narrow, except at the base, where they are broad and flat; the whole plant unarmed and dark green. It is oftentimes to be found in collections under the erroneous name of *Bonaparteia rigida*. Native of Mexico.

A. Salmiana.—The leaves of this plant are immensely thick, very dark green, and some four feet in length, armed at the point with an immense straight dark brown spine, and at the edges with large recurved ones. There is a variety called *A. Salmiana longifolia*, but its leaves occupy such an immense space, through being more spreading. Native of Mexico.

A. Saundersii.—A beautiful stemless species, with leaves spreading horizontally, from one to two feet long, oblong-lanceolate in shape, thick, somewhat glaucous, and armed with dark brown spines on the margins and points. The scape is some twelve feet high, erect; flowers numerous, in clusters, with a green ovary and yellow limb, from which extend the long stamens, tipped with large deep yellow anthers. Native of Mexico.

A. scabra.—A compact-growing and very handsome

plant; leaves rosulate, very glaucous, thick and fleshy, nine inches in length, and three in breadth at the base, edges armed with a few dark brown spines, and at the apex with a very stout and long black one. Native of Mexico.

A. Schidigera.—This very fine species is nearly allied to *A. filifera*. The lower leaves are spreading, the upper ones somewhat erect, and about a foot long, narrow, linear, dilated at the base, tipped with red, and having longitudinal bands of white above and below; the edges are also white, and from these hang long white broad woolly filaments, giving the whole plant a grotesque appearance. It seldom flowers, and, indeed, those who grow it should not desire it to bloom, as it causes the death of the plant. It flowered with us, for the first time in Europe, during the winter of 1867, producing a spike nearly six feet long, the lower half being clothed with reddish brown bracts; flowers produced in fascicles of two, or sometimes three; stamens long, surmounted with yellow anthers. It is a handsome plant, well deserving a place in every collection; and it forms a striking object plunged in rock-work in the sub-tropical garden. Native of Mexico.

A. Seemanni.—This is a very handsome small-growing species. Its leaves are arranged in a compact rosulate manner, and are spatulate, with apex acuminate, and the edges serrated or lobate, the marginal lobes bearing smaller, and the apex a larger brownish spine. Native of Central America.

A. striata.—A very distinct and desirable plant, with leaves from one to two feet in length, and less than half an inch in width, except at the base, where they are stouter and much broader, dull green, streaked from

base to apex with fine white lines ; plain at the edges, but armed at the points with a sharp red spine. Native of Mexico.

A. Thomsoniana.—An elegant, compact, small species, the leaves of which are some eighteen inches in length, and three in breadth in the widest part, dark green, slightly glaucous at base, armed at the edges with small close set red spines, and at the apex with a long and stout dark brown one. Native of San Luis Potosi.

A. univittata.—Leaves somewhat spreading, from one to two feet in length, and about three inches in breadth, tapering to a point, where they terminate in a stout dark brown spine ; the ground colour is dark green, with a central stripe from base to apex of greenish yellow, the under side pale green, armed at the edges with strong flat recurved dark brown spines. Native of Mexico.

A. Verschaffeltii.—A handsome species of compact habit, producing broad leaves, which are thick and fleshy ; the colour is milky green, the edges and the apex being armed with large brown spines ; it is an exceedingly variable species, some of the varieties being very distinct. It has not yet flowered in Europe. Native of Mexico.

A. virginica glauca.—Leaves somewhat thin and very glaucous, from two to three feet in length ; the edges are smooth and quite destitute of spines, but the apex is surmounted with a very long one, dark brown in colour. In general appearance this plant resembles a *Fourcroya* ; it is very distinct and desirable. Native of North America.

A. Warrelliana.—An elegant plant, with close set leaves, which are from six to eight inches in length, tapering to a point, and there armed with a stout brown spine an inch and a half in length, the edges being closely set with small ones of the same colour ; the colour of the

leaves is light glaucous green. It is a very handsome, and at the same time a rare species. From Mexico.

A. Xalapensis.—This very beautiful plant produces leaves from one to two feet in length, and about three inches in breadth, slightly spathulate, moderately thick, and rich dark green in colour, armed at the apex with a stout brown spine, and at the edges with smaller ones of the same colour, very closely set together. Native of Mexico.

A. xylacantha.—This very distinct and handsome species is quite stemless. The leaves are spreading, and when well grown about three feet long, and some three or four inches broad, thick and fleshy, ensiforme-lanceolate in shape, and glaucous green in colour, with a broad white margin, armed with distant large flattened spines, which are frequently forked. The scape is about ten feet high, producing the flowers in clusters, so as to form a dense raceme of bloom; a highly decorative plant. Native of Mexico.

A. Yuccæfolia.—A very distinct and interesting plant, which, however, requires a little more than greenhouse heat during the winter months. The stem is very short; leaves one to two feet long, and about two inches wide, strap-shaped, and tapering to a point, somewhat leathery, and very glaucous, channelled on the upper side, rounded below, the margins furnished with very fine teeth. Native of Mexico.

ALOE.

A genus of succulent plants, admirably adapted for the greenhouse or for window gardening, containing many species of great beauty, and belonging to the order Liliaceæ. The larger-growing species with scarlet tubular flowers are the most showy, and there is a quaintness about the general habit of some of them which strongly

recommends them to the cultivator. The smaller groups separated from *Aloe*, such as *Apicra* and *Haworthia*, contain many little vegetable gems, while another group, *Gasteria*, contains larger, more grotesque, and in some cases handsome-flowered species. They all require to be potted in well-drained soil, which should be mainly of a loamy texture.

A. abyssinica.—A majestic-looking plant, the leaves of which are very thick and fleshy, some two feet in length, and six inches in width at the base, tapering to an obtuse point, and there slightly incurved, dull green, and clothed at the edges with somewhat distant blunt spines. Native of Abyssinia, about Magdala and other places.

A. arborescens.—This is a very distinct and handsome species. Stem tall; the leaves are slightly spreading, lanceolate, recurved at the apex, and glaucous, margined with green. A very desirable plant. Native of the Cape of Good Hope.

A. plicatilis.—A very distinct and ornamental plant. Its leaves are thick and fleshy, tongue-shaped, and obtuse at the apex, glaucous green in colour, and arranged in a distichous manner, which has given rise to the popular name of "Fan Aloe." It is called by some *Rhipidodendron plicatilis*. Native of South Africa.

A. Soccotrina.—This is an elegant branching species. The leaves are somewhat erect, narrow, lanceolate, and glaucous green in colour, sparingly clothed with white spines. It is a native of Arabia and Cape of Good Hope.

A. variegata.—Leaves imbricate, somewhat spreading, and arranged in three rows, ovate in shape, and keeled at the back, in colour bright green, with transverse bands and streaks of grey and glaucous green. It is often called the *Partridge-breasted Aloe*. Native of the Cape of Good Hope.

ALOCASIA.

A genus of Arads, nearly allied to *Colocasia*. They are plants of great beauty, and easily grown into good specimens, providing the proper treatment be given, which consists in supplying them with strong moist heat, and an abundant supply of water to the roots. The soil should consist of peat and well-decomposed manure in equal parts, with the addition of a little loam and silver sand. They may be increased by division, and also by seeds.

A. gigantea.—Leaves large, sagittate, the upper part of the leaves spreading out; the same rich metallic lustre pervades the upper and under side as occurs in *A. Veitchii*, and yet it is abundantly distinct. It attains the height of four feet, and is a highly ornamental and attractive plant. Native of the Indian Islands.

A. intermedia.—This is a hybrid of very great merit. It is of free habit of growth, producing large sagittate leaves nearly three feet long, and of the same beautiful rich colouring as *A. Veitchii* (from which species and *A. longiloba* it has been produced); this plant should be in every collection. A garden hybrid.

A. Jenningsii.—A magnificent and most distinct species, growing between two and three feet high, and producing leaves some eight or ten inches long, and nearly as much wide. The ground colour is a beautiful shade of glaucous green, set off with about twelve oblong blotches of black. It is a perfect gem, fit for the dinner table, the exhibition table, or for the decoration of the plant stoves. This very free-growing plant is a native of the East Indies.

A. Lowii.—This very beautiful species is worthy a place in every collection of ornamental foliage plants. The

leaves are cordate-sagittate, with a deep notch at the base, which thus forms two oblong ear-like lobes; the under side of the leaf is deep purple, the upper rich dark green, with all the primary veins ivory white. It is a highly ornamental plant in any situation in which it may be placed. Native of Borneo.

A. Sedeni.—The leaves of this plant are nearly the same shape as those of *A. Lowii*, and retain the distinct ivory white primary veins of that species, which is one of its parents, whilst the ground colour more nearly resembles that of its other parent, *A. metallica*. It is a distinct and handsome plant, well deserving a place in every collection. A plant of garden origin.

A. Veitchii.—This plant has been figured under the name of *A. Lowii picta*, from which species, however, it seems abundantly distinct, and we therefore retain its original name. It produces large cordate-sagittate leaves of a rich deep green, the principal veins being pale or almost white; the footstalks are streaked or ringed, and the back of the leaves is of a deep slate colour. A very desirable and ornamental plant. Native of Borneo.

A. zebrina.—This is a fine bold-growing plant, attaining a height of four or more feet when well grown. The leaves are erect, broadly sagittate in form, and rich dark green in colour; they are borne upon stout footstalks, which are pale green, mottled and striped with zigzag bands of dark green. A noble and very desirable species. Native of the Philippine Islands.

ALTERNANTHERA.

A genus of dwarf-growing and highly coloured herbs belonging to the natural order *Amaranthaceæ*. They succeed admirably either in the greenhouse or in the flower

garden during summer, planted either as edgings to other plants in a riband bed, or when used in conjunction with other coloured-leaved plants; in this way we have seen them used with splendid effect. They may be used also to great advantage for the decoration of the dinner table. *Alternantheras* are of very easy growth, and should be potted in loam, leaf mould, and peat, with some silver sand. To increase them, either divide the old plants, or insert cuttings in a properly prepared pot, or if a quantity are required, both plans may be resorted to. The species are natives of Brazil.

A. paronychioides.—This is a dense compact-growing plant, with narrow spathulate leaves; the ground colour is deep orange red, beautifully shaded with olive green.

A. sessilis var. *amoena*.—A very dwarf-growing plant, the leaves of which are small, spathulate in shape, and orange red and purple in colour, which is shaded with deep green and bronze. A most elegant spreading little plant.

A. spathulata.—This is a freer-growing plant than *A. amoena*, and forms a compact tuft quicker; it is also a taller-growing kind. The leaves are spathulate, but more elongated than the others; the principal colours are reddish pink and light brown, these are shaded with bronze and green.

A. versicolor.—In many gardens this is grown under the name of *Telanthera ficoidea versicolor*; we have, however, included it here for convenience sake. It is a taller-growing plant, with medium-sized ovate leaves, branching freely, and making a compact and handsome plant; the colours are bright rosy pink and crimson, shaded with bronzy green. It is a splendid plant for dinner-table decoration.

ANANASSA.

This genus is familiar to every one by its popular name of "Pine Apple," and is frequently written *Ananas*.

The plants described here are variegated forms of that well-known plant. They should be grown in a compost consisting of two parts fibrous loam, one part peat, one part composed of dung and leaf mould, with a small portion of sand added; after potting, in spring, if it is possible to give them a little bottom heat, they will grow more rapidly, although it is by no means necessary to the cultivation of fine specimens. These plants have been long justly admired and grown as stove plants, both for home decoration in the plant houses, and for public exhibition, but it is not so generally known that *A. sativa variegata* is of one the most handsome plants for out-door decoration in summer time, and very hardy; this fact we wish to thoroughly impress upon amateurs, as when used for vases upon terraces, or in similar situations, it produces a beautiful effect, totally different from that yielded by any other plant. The fruits of these varieties are small, high flavoured, but very rough, and consequently inferior to the kinds grown for dessert fruit. Like them they are increased from suckers, and from the crown which is produced upon the summit of the fruits; after taking off the suckers or crowns, lay them to dry for a day or so, then put them into strong heat, when they will soon push out roots and form handsome successions.

A. Porteana.—This variety has a somewhat erect habit of growth. The leaves are armed on the margins with sharp spines; they are deep olive green in colour, with a broad band of pale yellow extending down the centre,

from base to apex. We have not seen this plant used in the open air, but it is probable that it may succeed as well as the following variety, and if so, it will form a beautiful contrast to that plant. Native of the Philippine Islands.

A. sativa variegata.—This beautiful plant produces leaves some two or three feet long, sheathing at the base, tapering to a sharp point, and having the edges thickly set with recurved spines. The leaves are arranged in a rosulate manner, and are beautifully arched; the centre of the leaf is rich bright green, with occasionally a few lines of white, and broadly margined with rich creamy yellow, tinged with red towards the margins, especially when well exposed to the light. A most lovely vase-like plant, unequalled for decorative purposes, either in the plant house or the open air; the origin of this variety is unknown.

ANTHURIUM.

In this family we have many plants of great beauty, for although but few of them possess actual variegation, yet the bold outline, and rich and varied green tints of the leaves of many of the species, render them highly ornamental. *Anthurium* belongs to the order *Orontiaceæ*, a group which in general appearance resembles the *Arads*, from which indeed they differ only in having hermaphrodite flowers. The genus contains many species of robust constitution, with bold coriaceous leaves, which renders them eminently adapted for sub-tropical gardening. They should be potted in rough peat and loam, with a little river sand added. A copious supply of water will be necessary during summer and winter, although, as a matter of course, less will be required during the dull months.

These plants may be increased either by cuttings or seeds, but to ensure their seeding, the flowers should be artificially impregnated, although many kinds seed profusely without any such assistance.

A. acaule.—A noble plant, producing broad oblong leaves, which are acuminate, and from one to three feet in length, erect, and arranged in a rosulate manner, dark shining green on the upper surface, but somewhat paler below; the spadix is blue in a young state, and is borne upon long footstalks, and thus contrasts well with the leaves. It is a native of the West Indies.

A. cartilagineum.—A very fine plant for the sub-tropical garden, as well as for in-door decoration. The leaves are heart-shaped, thick, and fleshy, about twelve inches in length, and dark polished green above, paler below. Native of Venezuela.

A. cordifolium.—This is one of the finest species of the genus, attaining a height of about four feet. The leaves, when mature, are about three feet in length, and twenty inches in breadth, heart-shaped, of a deep shining green on the upper surface, and paler below. There is a spurious variety of this, which, compared with the true plant, is not worth cultivating. It will undoubtedly be a grand plant in a sheltered nook in the sub-tropical garden. Native of South America.

A. coriaceum.—This is a superb plant for the sub-tropical garden. The petioles are stout and about two feet long, the blade of the leaf is also some twenty-four or thirty inches in length from the point of attachment, where it seems as if it was jointed; they are very thick and leathery, ovate, and deep full green on both surfaces. Native of Brazil.

A. Hookeri.—Leaves obovate-spathulate, narrowed to a

wedge-shaped base, and shortly stalked, shining, about thirty inches long, and eight inches broad. Native of Demerara.

A. leuconervum.—A handsome erect-growing species, with leaves about a foot or more long, cordate in shape, thick in texture, and deep olive green in colour, the ribs being margined with greyish white; the petioles of this species differ from *A. magnificum* in being terete. A very ornamental plant, both in the stove, greenhouse, or sub-tropical garden. Native of South America.

A. magnificum.—This plant should be in every collection of ornamental foliage plants. It is of free growth, and from its earliest state up to maturity it is not to be surpassed for decorative purposes, being equally at home in the dwelling-house, stove, or public exhibition; the petioles are from one to three feet in length and angular; its leaves are from six inches to three feet long, cordate in shape, and rich velvety olive green in colour, the primary veins being white. It is a highly ornamental plant, found in collections sometimes under the name of *A. grande* and *A. cordifolium*. Native of Brazil.

A. Miqueliana.—A fine species for the decoration of the sub-tropical garden; it grows several feet in height, with broad erect dark green leaves. Native of Tropical America.

A. regale.—A fine ornamental species, which produces its large cordate-acuminate leaves upon long smooth footstalks. These measure from one to three feet in length, and are a dull metallic green, with white veins, the young leaves are tinged with rose colour. It is a grand plant for exhibition, or for the decoration of halls, or for a window plant. Native of South America.

A. signatum.—A very curious plant, well deserving

cultivation. The leaves are so distinctly divided, as almost to appear trilobed; the front lobe is about a foot in length, and four inches in width, whilst the two side lobes are only four inches in length, and about six inches from the mid-rib to the extremity. They are borne upon footstalks about twelve inches long, and are of a bright dark green in colour. It is well adapted for covering a pillar, and will no doubt be very useful for the sub-tropical garden. Native of Venezuela.

A. subsignatum.—This plant is well deserving general cultivation. The leaves are thick and fleshy, borne upon petioles about a foot in length; the blade is from twelve to eighteen inches in length, and about the same breadth in the widest part, hastate in shape, with obtuse points, dark shining green above, paler below. Native of Costa Rica.

A. tetragonum.—In this plant we have a beautiful subject for the sub-tropical garden during the summer months. The leaves are erect, the petiole short, quadrangular, with a thick node at its juncture with the blade, which commences with a narrow wing, until it ultimately reaches a foot in width at its broadest part; the margins are undulate, deep shining green on the upper side, somewhat paler below. Native of Tropical America.

APHELANDRA.

This genus contains many species which produce flowers of surpassing beauty, but some few, of which we here include the best, are remarkable for their ornamental foliage. They are mostly plants of free growth, but require great attention to form them into handsome bushy plants, as their natural tendency is to grow erect, without making lateral growths. The soil best adapted

for their culture, is a mixture composed of two parts light loam, one part peat, and one part sand; the pots should be well drained, as they enjoy a liberal supply of water during the growing season, at which time the temperature should range between 65° and 75°. *Aphelandras* enjoy frequent syringing, and need careful attention to keep them free of insects; they are easily increased in the spring, from cuttings of the lateral growths or well-ripened wood.

A. Leopoldii.—A very handsome plant, producing opposite leaves, which are somewhat obovate-oblong in shape, and acuminate. The ground colour on the upper surface is dark rich green, the mid-rib and primary veins being pure white, while the under surface is of a uniform pale green. Native of Brazil.

A. Roezlii.—This is probably the finest species of this genus yet introduced to our gardens; its flowers are remarkably handsome, but it is the beauty of its foliage which has caused us to introduce it in this place. The leaves are opposite, oblong, and dark green in colour, over which is spread a net-work of silvery grey, producing somewhat the appearance of frosted silver. Native of Mexico.

ARALIA.

A very ornamental genus; the order to which they belong, and to which it gives its name, are found in almost all parts of the globe. The great majority of the species are objects of great beauty in the conservatory, and many are even hardy, or so near it that they require but slight protection during the winter months.

Aralias should be grown in sandy loam, and if a little peat and leaf mould be added it will be advantageous

to them ; they may be increased by cuttings, eyes, and seeds.

A. crassifolia.—An erect-growing plant, which from its distinct habit, makes a fine ornamental object either in the conservatory, or open air during summer ; it is also well adapted for in-door decoration, especially during the winter months. The leaves are alternate, from one to two feet in length, and about an inch in breadth, thick and fleshy, having a few obtuse distant lobes along the edges, which end in a short spine ; on the upper side they are very dark olive green, and the prominent mid-rib deep orange, the under side is of a uniform dull brown. Native of New Zealand.

A. crassifolia punctata.—This is a plant that has been for some time in cultivation under this name. The shape of the leaf is like that of *A. crassifolia*, it is not, however, so thick in texture ; the lobes at the edges are not so obtuse, and they are terminated by a sharper spine ; the ground colour is dark olive green, upon which runs a continuous line of emerald green blotches from base to apex on either side of the mid-rib. It is a very ornamental greenhouse species, said to have been introduced from New Zealand.

A. heteromorpha.—Leaves sometimes ovate-lanceolate, with serrated edges, at other times becoming bifid, and even trifid at the apex, and from six to nine inches in length, in colour bright shining green ; it is of robust, yet compact habit, and is one of the best greenhouse plants for the decoration of apartments.

A. leptophylla.—An elegant slender-growing plant, with compound leaves, bearing often seven or more petiolate leaflets of a somewhat pendent character, and dark green in colour. It is a most beautiful plant for dinner-table

decoration, for vases, or jardinetts, and also for the stove and public exhibition; it should be in every collection of ornamental-leaved plants, however small.

A. Osyana.—In general habit and appearance this species resembles *A. leptophylla*, but its leaflets are deeply bifid at the ends; the ground colour is bright green, the primary veins and tips of the leaflets being chocolate brown. A most elegant plant, worthy a place in every collection. Native of the South Sea Islands.

A. papyrifera.—This highly ornamental plant attains the height of six or seven feet, or even more; the stem branches above; leaves from eight to twelve inches long, five or seven-lobed; both these and the branches are clothed with a kind of down, which soon falls from the upper side, leaving it quite smooth. At all times a noble plant, but when in bloom its beauty is greatly enhanced, for although the individual flowers are unattractive, yet as they are arranged in drooping panicles some two or three feet long, the whole plant presents a fine appearance. It was treated as a stove plant upon its first introduction, but as we have become better acquainted with it, we find it almost or quite hardy, and forming one of the most ornamental plants in the open air, where if it should be killed at the top in winter, it will send hundreds of suckers from the roots in the following spring. From the pith of this plant, which is very white, the beautiful "Rice Paper" of the Chinese is made. It is a native of the Island of Formosa.

A. pentaphylla.—This plant is a beautiful object, in its normal condition producing a digitate leaf, although it may often be seen with but three leaflets; they are each from six to ten inches in length, and from one to two inches in breadth, deeply lobed or pinnatifid, and bright shining

green in colour. It is a most useful and ornamental species, being admirably adapted for any situation in which a plant is wanted for decoration. Said to be a native of Japan.

A. reticulata.—A very distinct and handsome species, and like most of this genus, eminently adapted for decorative purposes, either in the dwelling-house or stove; indeed, it succeeds tolerably well even in the conservatory, although it thrives best in the stove during winter. In its young state it is a fit occupant for any position where a light and graceful plant is required, and when large it forms a beautiful object in the sub-tropical garden; the leaves are alternate, strap-shaped in a young state, becoming larger with age, dark green in colour, reticulated with a lighter shade of the same.

A. Sieboldii.—This is a very fine ornamental foliage plant for the decoration of the greenhouse or conservatory, it also makes a splendid object in the sub-tropical garden; indeed, it has proved itself perfectly hardy in many places in England, Ireland, and Scotland. It rises upon a straight stem, forming an umbrella-like head; the leaves are large, firm in texture, digitate in shape, and deep shining green in colour. Native of Japan.

A. Sieboldii variegata.—A variety similar in all respects to the species, saving that it has not been proved to be hardy, and the leaves, instead of being wholly green, are blotched and margined with white. Native of Japan.

A. Sieboldii variegata aurea.—This variety is a somewhat larger and stronger grower than the preceding, and the variegation is rich yellow, instead of white; it is a superb form of this fine plant. Native of Japan.

A. trifoliata.—This plant resembles *A. crassifolia*, saving that it has three leaves instead of one, and on this account

its habit is somewhat more dense. In a young state, this plant is admirably adapted for dinner-table decoration; in its more mature state, it forms a beautiful object for the adornment of halls or the drawing room, and for the sub-tropical garden in the summer months. Native of New Zealand.

ARAUCARIA.

A genus of Conifers which include many species of surpassing beauty, but the great majority of the kinds known are not sufficiently hardy to withstand our climate in the winter months; they, however, are noble ornaments in a conservatory, their symmetry and elegant proportions attracting attention and eliciting universal praise. In a young state they are useful for table decoration, and as they increase in size they may be used for the sub-tropical garden in summer, and the temporary embellishment of the ball-room or other similar purposes in winter. It is, however, in a large conservatory, either standing in a good-sized tub, or when planted in the border or bed of such a house, that their beauty is most fully developed. To grow these plants in a thoroughly healthy state, the drainage must be perfect, and the soil should be good friable loam mixed with some river sand. They may be increased by seeds and cuttings—from the former the most handsome plants are obtained. To secure a good plant from cuttings, the crown or leading shoot should be taken off and inserted in a pot of sand, fixing it firmly to prevent its being disturbed; place it at first in a cool place, and remove it afterwards into slight warmth; this, when rooted, should be potted into the soil before recommended. From the plant which has been thus decapitated, young growths will at intervals continue to arise; these should be taken off when large enough, and treated in

the same manner. In addition to the leading shoot rooting, the side pieces will also throw out roots, but it is a very long time before they attain a handsome shape, and they are uncertain and unsatisfactory, therefore our advice is, have nothing to do with them.

A. Bidwillii.—This noble tree is a native of Moreton Bay. It is known to the inhabitants as the *Bunya-Bunya*, and they consume large quantities of its seeds for food. When fully grown this grand plant attains a height of 150 feet, but in a young state it is exceedingly ornamental. The leaves are deep heavy green in colour, and the habit of the whole plant is very regular and symmetrical, rendering it very ornamental.

A. Cookii.—In some respects this is rather coarse in its growth, but this is only through comparison with such as *A. elegans*. The leaves are larger than that species, and are more distinct; the symmetrical branches and bright green leaves render it a very ornamental plant, well deserving general cultivation. Native of New Caledonia.

A. Cunninghamii (The Moreton Bay Pine).—Attains a height of 100 feet or more. Its rich dark green leaves and beautiful branches—which, like all this family, are produced in whorls—are very symmetrical and slightly pendulous. It is a superb greenhouse or conservatory plant, and it has withstood the winters with us in the open air in many places on the south and south-west coast of England.

A. Cunninghamii glauca.—In all respects resembling the preceding, saving colour, which instead of dark rich green, as in that plant, is a beautiful glaucous green. Native of Moreton Bay.

A. elegans.—A plant of recent introduction, and of extreme beauty, its elegant and symmetrical drooping

growth, and its rich bright green leaves, in conjunction with the fact of its being of dwarfer habit than any other known species, will render it a universal favourite. It is a native of New Caledonia.

A. excelsa (The Norfolk Island Pine).—A most beautiful and symmetrical plant, attaining, when mature, the height of 120 to 150 feet; the branches are verticillate, symmetrical, and pendulous; leaves bright green in colour. It is one of the most useful and ornamental plants that can be grown; in a young state it is admirably adapted for in-door decoration, either in the drawing room or hall, or on the dinner table, whilst in the greenhouse or conservatory it forms a splendid object.

A. Rulei.—This is a noble tree when fully developed, of robust growth, and dense in habit; the young plants (which is the only state in which it is at present known to the horticultural world) are similar to the preceding species, but as it acquires age, it becomes almost as robust as the well-known *A. imbricata*. No large plants have been introduced to this country. Native of New Caledonia.

ARECA.

A genus of elegant pinnate-leaved Palms, which are widely distributed over the earth, some of the species being found in the East Indies, while others occur in the West; they exist also in the Islands of the Mauritius and its dependencies, in the Island of Madagascar, in New Zealand, and in Australia. The genus *Areca* is characterised by its branching spadix, and double spathe, which fully encloses the flowers; these latter are unisexual, but borne upon the same spike, the female blooms having six rudimentary stamens, while the male flowers have a six-cleft perianth; fruit one-seeded.

Arecas should be grown in loam and peat in equal parts, with a liberal addition of sand. As they become large, a little more loam than peat should be used, say two parts of the former to one of the latter. These plants are all highly ornamental, their graceful plume-like leaves affording a pleasing contrast to the more erect-growing plants in the stove and greenhouse; independent of this, however, many of them are available for the decoration of the dinner table, for the drawing room, and sub-tropical garden. They can be increased by suckers occasionally, but seed is the only way by which a stock can be rapidly obtained.

A. alba.—An exceedingly handsome species, admirably adapted in a young state for dinner-table decoration. The stem is slender, attaining a considerable height. Leaves four to eight feet in length, pinnate, the petioles clothed with a white tomentum; pinnæ two feet long and about two inches wide, bright green on both sides, the whole plant quite unarmed. Native of the Mauritius.

A. catechu.—This is an interesting plant, from the fact that it produces the famous "Betel Nut," of which such immense quantities are consumed in India; it is moreover a very ornamental plant in the stove, and in a young state is very effective as a dinner-table plant, but too tender for using in the sub-tropical garden. The petioles are broadly sheathing at the base, leaves pinnate, from three to six or more feet in length; pinnæ twelve to twenty-four inches in length, and about two inches in breadth, somewhat thin in texture, and light green. The plant is quite destitute of spines. Native of the East Indies.

A. lutescens.—This elegant plant is somewhat of a nondescript, and has been bandied about from *Areca* to *Hyophorbe* several times; it was believed for some time

to be the true *Hyophorbe indica*, but that plant has made its appearance in English gardens, and the present one has again to fall back into *Areca*, with the character of having several points of distinction about it, which will probably create for it a new genus. It is an extremely beautiful plant with pinnate arching leaves; the stem and sheathing petiole are perfectly smooth, yellow in colour, curiously and conspicuously mottled with black; the pinnæ are from twelve to eighteen inches in length and one in breadth, pendant, and rich dark green on both sides. It is admirably adapted for table decoration, and also as a sub-tropical plant, if a very shady place is selected. Native of the Mascareen Islands.

A. monostachya.—This is an elegant little Palm, admirably adapted for the adornment of apartments, for dinner-table decoration, or for producing effect in a Wardian case. Stem slender; petioles sheathing; leaves pinnate and pendant, six to twelve inches in length, bifid at apex; pinnæ about four inches across, broad, irregular in shape, with præmorse ends; dark green. Native of New Holland.

A. Wallichiana.—An extremely rare and elegant species, which we hope to see introduced to our collections in quantity. It is a small-growing plant, and will form a perfect gem for table decoration, as well as producing a beautiful effect in the stove. The leaves are pinnate and arching; pinnæ broad and dark green; petioles clothed with orange and black scales, which give it a peculiar and striking appearance. Native of the East Indies.

ARTOCARPUS.

The order to which the present genus belongs contains plants possessing the most opposite properties—on the one

hand the "Upas Tree" *Antiaris toxicaria*, said to be a virulent poison, and on the other hand the "Bread Fruit Tree," which is a member of the genus now under consideration, in addition to its possessing several species with very ornamental foliage, is extremely interesting on this account. *Artocarpus* are to be found in the tropics only, and therefore require considerable heat to induce them to grow vigorously. The soil should be a mixture composed of rich loam and leaf mould, in the proportion of two parts of the former to one of the latter, adding a little silver or river sand. The drainage should be carefully attended to, for these plants will not long remain in a healthy state if anything stagnant remain about their roots, although they enjoy a copious supply of water, and a very moist atmosphere. The plants comprising this family are propagated by cuttings; the young and slender lateral growths are best adapted for this purpose, but they are at all times very difficult to strike. They may be also increased by suckers, and this latter plan is far more certain, but the suckers are very difficult to get, at least in a cultivated state, although they produce them abundantly in their native countries.

A. incisa (The Bread Fruit Tree).—The leaves of this plant are from two to three feet long, deeply lobed or incised, deep green on the upper side, paler below. It is of noble aspect and stately mien, and forms a distinct and beautiful object in any collection. Independent of its noble outline, it is exceedingly interesting, from the fact of its yielding perhaps the most extraordinary fruit in the whole vegetable kingdom—the famous bread fruit, which is said to possess the flavour of new bread, and to be very nutritious, is produced from the axils of the leaves in large globular heads, and is highly prized by

the natives of Otaheite ; indeed, so highly was this plant esteemed, and so great were the advantages expected to be reaped by the introduction of this plant into the West Indian Islands, that the British Government, in 1787, dispatched Lieut. Blygh, in the ship *Bounty*, provided with every convenience for the removal of a large quantity of these plants to those Islands. The failure of his mission through the subsequent mutiny of his crew, is a matter of history with which most of our readers are doubtless well acquainted ; a second expedition was, however, more successful, but the results have never equalled the expectations regarding this plant.

ASTROCARYUM.

With the exception of a few species, these Palms attain a considerable height, and all require stove treatment. Many of them find their homes on the banks of rivers, nor do they stray far from such places. The stems are mostly slender and prickly, and the leaves pinnate ; the flowers are unisexual, produced upon simply branched spikes, the male flowers occupying the upper portion, and the female the lower portion of the spadix. The fruits are oval and one-seeded. Pot in a compost of rich loam two parts, and one part vegetable mould ; they enjoy an abundance of water. Increased by seeds, and also by suckers when they are to be obtained.

A. acaule.—As its name implies, this species is stemless, but it produces an abundance of leaves which are pinnate, and from three to ten feet in length, slender and spreading ; pinnæ narrow, arranged in clusters, and pendent. The whole plant is furnished profusely with long flat black spines. This plant is abundant in moist woods on the Rio Negro and Amazon River.

A. humile.—This species seldom makes a stem more than a few feet in height, and its sheathing petioles and mid-rib are armed with long black spines. Leaves pinnate, from three to six feet in length, slender, and spreading; pinnæ clustered, and pendent. Native of moist woods on the Rio Negro.

A. Murumuru.—The stem of this handsome plant seldom exceeds twelve or fifteen feet in height, which, as well as the sheathing base of the petioles, are densely clothed with formidable black spines, upwards of six inches in length, and pointing in a downward direction; leaves pinnate, dark green above, silvery white below. Native of the banks of streams, and in swampy forest ground on the Upper Amazon.

A. rostratum.—This species grows some twenty or thirty feet in height, but as it forms its stem somewhat slowly, it is many years before it becomes too large for an ordinary stove. The stem is slender, densely clothed with long black spines. Leaves irregularly pinnate, from three to eight feet in length; petioles broadly sheathing at the base, and densely armed with black spines, some of which are two inches in length; pinnæ twelve to eighteen inches in length, terminal lobe much larger and bifid; dark green above, silvery white below. The white flowers are produced in its prickly boat-like spathe, in quite a small state. Native of Brazil.

ATTALEA.

This is a superb genus of Palms, all natives of America, some species being found at considerable altitudes. They are mostly tall-growing plants, and require the heat of the stove in most instances to develop their beauties.

This fact should not, however, deter amateurs from cultivating Palms, because even the tallest kinds are a very long time in forming their stems, and consequently many years will elapse before they outgrow the accommodation of an ordinary stove or greenhouse. The leaves are pinnate, and the entire plants are destitute of spines. The fruits are produced in large clusters, and turned to advantage in the manufacture of numerous fancy toys, &c. Peat and loam in equal parts suits them well, and they enjoy a copious supply of water.

A. Cohune.—This beautiful species is highly ornamental, and should be grown in every collection. Although this and many other Palms ultimately attain to immense height, yet in a young state they are exceedingly handsome. Leaves erect, ultimately spreading, pinnate, and furnished with from three to four dozen dark green pinnæ, some eighteen inches in length; petioles rounded below, and dark brown, flat upon the upper side, and green; whole plant unarmed. Native of Central America.

A. funifera.—A handsome species, which yields a fibre called "Piassaba," used by the Brazilians for ropes, and by us in England for street brooms. The seeds of this plant are called "Coquilla Nuts," and are used for various purposes, such as handles for doors, umbrellas, &c. The vivid deep green of the leaves renders this a very ornamental plant. Native of Brazil.

A. nucifera.—Stem slender; leaves pinnate, from three to six feet in length; pinnæ twelve to eighteen inches long, and about one inch in breadth, the terminal lobe broad and bifid, rich dark green. It forms a beautiful ornament in either stove, greenhouse, or sub-tropical garden during summer. Native of New Grenada.

BACTRIS.

Slender-growing prickly Palms, which are found in recent forests in South America. They are very numerous both in species and specimens, and enter largely into the plants that form the undergrowth in those forests. The species of *Bactris* have slender stems, usually varying from two to six or ten feet high, though some few species attain a height of fifteen feet; they are all clothed with somewhat formidable spines. The flower spike is enclosed in a double sheath or spathe, and these also are densely set with sharp black spines; the flowers of both sexes are produced together, they yield one-seeded fruits. From some species of *Bactris* the walking canes known as "Tobago Canes" are obtained. The plants comprising this genus are all easily grown, and although some species do not make handsome plants as they approach maturity, they are very ornamental when young, and as they all sucker very freely, it is easy to maintain a few elegant young ones, discarding the old and useless plants. They should be potted in loam, peat, leaf mould, and sand, in equal parts.

B. baculifera.—Leaves pinnate, bifid at the apex, from two to six feet in length; pinnæ arranged in clusters, about a foot long, and two inches broad, dark green above, paler below; petioles sheathing, and densely clothed with sharp brown and black spines, which are an inch and a half in length. Native of South America.

B. flavisipina.—This is an elegant Palm of low growth, with pinnate leaves, which are bifid at top; the pinnæ are clustered, from six to twelve inches in length, and one in width, dark green; petioles sheathing at the base,

and furnished with a profusion of long yellow spines, which are tipped with black. Native of Brazil.

BAMBUSA.

A genus of *Graminaceæ*, many species of which are hardy, or nearly so, and are fit subjects for the decoration of the open borders or pleasure grounds. The genus is of immense importance to the inhabitants of tropical countries, for their stems are turned to a vast quantity of uses.

The species enumerated here requires the warmth of the stove to develope its beauties, and if sufficient space can be given it will form a magnificent object. The soil best adapted for their culture is very rich turfy loam two parts, one part peat, and a little river sand; and during the summer months, supply them liberally with water.

B. arundinacea.—This is the common Bamboo of the tropics. It forms a very stout stem, which rises like a beautiful column to some fifty or sixty feet in height, the laterals which spring from the nodes producing quite a profusion of its light and bright green leaves, the whole plant presenting the appearance of a beautiful plume of feathers. It may be grown in pots, when it forms a very ornamental object, and it may be used during summer for the sub-tropical garden, also for the decoration of apartments, halls, or corridors with splendid effect. It is a native of the tropics.

BANKSIA.

This is an Australian genus of the natural order *Proteaceæ*, an order which contains many ugly gouty-looking plants, as well as some of the greatest beauty, and to the latter class the present family belongs.

Banksias were formerly favourite plants, and most deservedly so, for they afford a contrast which is produced by no other plants, and it is difficult to understand why they have been allowed to pass so suddenly out of cultivation. However, as so many of the species are now flowering and producing seeds so near home as the Azores, it is to be hoped, now that sub-tropical gardening is so rapidly extending, that efforts will be made to place these fine plants upon as good a footing as they formerly occupied, for they would make splendid objects used in that way in the open air during summer, a free circulation of air being absolutely necessary to their existence. *Banksias* require thorough drainage, without strict attention to which failure is sure to ensue. The soil should be a mixture of peat, loam, and sand, in about equal parts. In repotting them, especial care should be taken that none of the roots are broken, or mutilated in any way. In watering, extremes must be avoided, for although they do not like too much, yet few plants suffer more from the effects of drought. They may be increased by cuttings of well-ripened young wood, placed in small pots of sand, not shortening any of the leaves, but only removing sufficient to allow the cutting to be firmly fixed; then place them under a bell-glass in a cold frame, shading them from the sun. They are also increased by seeds, which should have but a slight covering, and be transplanted as soon as they are large enough to handle. The species described below are all handsome and well deserving cultivation, and were all to be found a few years ago in our national Botanic Garden, from which we much regret the disappearance of so many of these noble plants. Let us hope, however, that every effort will be made to repair

the loss of these and many other fine old greenhouse plants, for which those gardens were once so famous.

B. australis.—A species of compact habit, growing some five or six feet high. The leaves are from one to two inches long, and half an inch broad, blunt at the apex, armed with several short sharp spines, and tapering at the base, deep green on the upper surface, snowy white beneath. Native of South Australia.

B. Caleyi.—This is an elegant species. The leaves are from six to twelve inches long, linear, and deeply and regularly toothed from base to apex, dark green above, paler below. It grows some five or six feet in height. Native of Australia.

B. Cunninghamii.—This forms a dense and handsome shrub of six or eight feet high. The leaves are from two to three inches long, and scarcely half an inch broad, linear in shape, the apex præmorse, as if bitten straight off, the upper surface dark green, silvery below. A very handsome species, especially when adorned with its large heads of flowers, which resemble bottle brushes. Native of Australia.

B. dryandroides.—In this species we have perhaps the most graceful of the whole family, and when young, one of the most elegant table decorators we ever saw employed for that purpose. It grows about six feet high; the stem is clothed with reddish brown hairs; the leaves are from six to ten inches long, and scarcely a quarter of an inch broad, pinnatifid, divided almost to the mid-rib, the lobes triangular, deep green above, and reddish brown below. Native of Australia.

B. elatior.—This species attains a height of fifteen or twenty feet. The leaves are from six to ten inches long, and one inch broad, linear-oblong in shape, tapering

slightly at the base, and deeply toothed at the edges, deep green on both sides, the mid-rib on the under side being clothed with rich brown coloured hairs. Native of Australia.

B. foliosa.—A handsome and distinct species. The leaves are from six to ten inches long, or more, and from one to two inches wide, oblong in shape, with prettily serrated edges, deep green above, greyish beneath. Native of Australia.

B. integrifolia.—This is also a very handsome species, growing some ten or twelve feet high. The leaves are cuneate-oblong in shape, about six inches long, and a little less than an inch wide in the broadest part, the edges quite plain and entire, upper side dark green, beneath silvery white. It is sometimes called *B. glauca*. Native of Australia.

B. integrifolia compar.—An elegant branching species, attaining a height of six feet. The leaves are very densely set upon the branches, oblong in shape, tapering at the base, blunt at the apex, and serrulate on the edges; the upper side is dark olive green, the under side silvery white. Native of Australia.

B. latifolia.—A fine plant, growing in its native habitat from twenty to thirty feet high, but as all these plants are slow in growth, it will be many years before this species attains that height with us. The leaves are from six to ten inches long, and three broad, obovate-oblong in shape, and serrate at the edges; the upper surface is deep green, under side clothed with woolly greyish hairs, those on the mid-rib being bright brown, and the veins slightly paler. It is a most desirable plant. Native of Australia.

B. quercifolia.—A species forming a handsome bush some

five or six feet high. The leaves are cuneate-oblong, deeply incised at the margins, and having a short spine upon each lobe. Native of South Australia.

B. serrata.—The leaves of this species are upwards of six inches long, and one inch broad at the widest part, oblong in shape, becoming cuneate at the base, and strongly toothed at the edges; colour a uniform dark green. Native of Australia.

B. solandra.—This is truly a noble plant, attaining a height of from six to twelve feet. The leaves are deeply pinnatifid, from four to six inches long, and upwards of two wide, having from three to six pairs of lobes on each leaf; the apex is quite straight, as if bitten off; upper side is dark green, under side silvery white. It is well deserving a place in every garden, though we are sorry to admit that we know of but one plant living in Britain; nevertheless we hope to see it again introduced to ornament our gardens. Native of Australia.

B. speciosa.—As its name implies, this is a very handsome kind—when young one of the most beautiful plants that can be used for dinner-table decoration. It grows some six or eight feet high; the leaves are from five to ten inches long, and about half an inch wide, pinnatifid, but divided almost to the mid-rib, which gives the lobes a semi-circular shape with a spine on the end of each; the upper side is deep green, beneath silvery white, while the mid-rib is clothed with ferruginous woolly hairs. Native of Australia.

BARRINGTONIA.

Plants of this genus are seldom met with in our stoves, and yet the species here described is one of the most noble ornamental-leaved plants with which we are acquainted. They should be potted in a mixture of loam, peat, and

sand, in the proportion of two parts of the former to one each of the latter. Water should be given abundantly, and a moist air maintained, with a temperature ranging from 65° to 95°. Some of the objections perhaps to this family are, that they require strong heat, and attain a considerable height, but where sufficient room can be given them, they form stately ornaments. *Barringtonias* may be increased by cuttings, the lateral shoots being better for the purpose than the gross wood of the main stem.

B. speciosa.—This plant in its native country attains a height of from twenty to thirty feet, but under cultivation, a plant with a single stem, and some six or eight feet in height, is extremely beautiful. The leaves are alternate, from one to two feet or more in length, broadly obovate, and bright shining green on the upper surface, slightly paler below. Its stately habit renders it worthy a place in every collection. Native of the Indian Archipelago.

BEAUCARNEA.

A small and exceedingly curious genus of Mexican Bromeliaceous plants. They form slender woody stems, with a remarkably swollen or napiform base. The general opinion is that they are of extremely slow growth, and unless treated in a liberal manner as to soil and watering, they probably would be so, but under favourable treatment good specimens may be obtained in the course of a few years. *Beaucarneas* are both grotesque and graceful in habit, and form striking objects in the conservatory, or in the open air during summer. They should be potted in rich fibrous loam and sand, with ample drainage, and, during the growing season,

must be supplied liberally with water. They may be increased by cuttings when these can be obtained, but chiefly by seeds, which hitherto have been imported from their native country, no specimen, as far as we are aware, having flowered in European gardens. They have been sometimes cultivated under the barbarous name *Pince-nectitia*.

B. glauca.—In this species the stem is slender, while the swollen base becomes woody and hard with age. It bears a crown of long pendent glaucous leaves, which are from two to three feet in length, and present the appearance of a beautiful fountain. Native of Mexico.

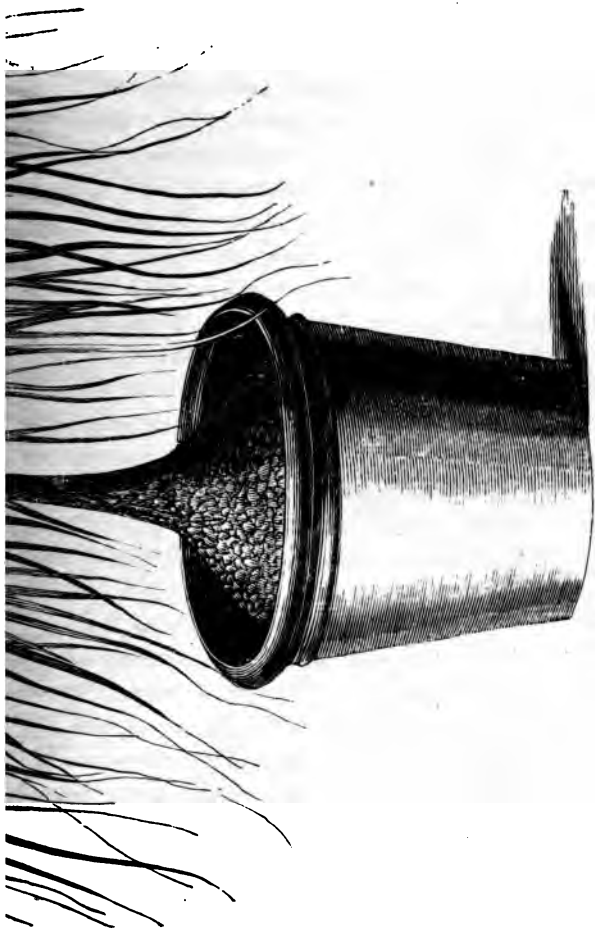
B. glauca latifolia.—In general appearance this resembles the preceding, and indeed, differs from it only in its stouter and more robust stem and broader leaves. Native of Mexico.

B. longifolium.—This is the most distinct and beautiful species of the genus. The stem is stout; leaves from six to ten feet in length, narrow, pendent, forming a beautiful vase-like centre, and dark green in colour. Native of Mexico.

B. recurvata.—This species is sometimes to be met with under the name of *B. tuberculata*. Our woodcut illustration gives a good idea of its general appearance, and our readers may judge that such a plant, with its bright green pendulous leaves, must form a beautiful object, either in the open air during summer, in the conservatory, or indeed in any position. It is a native of Mexico.

B. stricta.—Stem stout, with a swollen base, as in all the other species. The leaves are some three feet or more in length, less than an inch broad, and very glaucous. Native of Mexico.





BEAUCARNEA RECURVATA.

Mexico.

BEGONIA.

A great quantity of the *Begonias* are not only remarkable for their free-flowering qualities, but also for the exquisite variegation of their foliage; and although the flowers of the ornamental-leaved kinds are not so attractive as those of their plain green relatives, yet they are sufficiently large, and produced in sufficient abundance to make them very effective in the stove. A great many of the finely variegated-leaved kinds are of garden origin, having for their parent *B. Rex*, which created such a sensation when first introduced. Some amateurs grow these plants for summer decoration only, resting them by partially drying off during winter. This we consider a mistake, as they are so very attractive during the dull months, and require but little attention, although they would amply repay the most tedious care. To grow these plants well (and it may be well to remark, in passing, that what is worth doing, is always worth doing well, for these plants are anything but ornamental if neglected), the soil should be composed of one part sandy loam, one part peat, one part leaf mould and well-decomposed manure, and one part sand. During the summer season *Begonias* require an abundance of water at the roots, and also a tolerably moist atmosphere, to prevent the edges of the leaves from becoming brown, which is a great disfigurement to them, but in winter much less must be given. Many growers of these plants are extremely fond of using the syringe to them, but as far as our experience goes, we cannot too strongly condemn the practice; they should be potted early in spring, and if thought likely to suffer during winter, another shift may be given them in autumn.

Begonias are very easily propagated, either by stem cuttings or leaves; in the latter case, the primary veins should be slightly cut in numerous places on the under side, and then they should be laid upon a cutting pot, using a few pieces of potsherds to keep them pressed to the sand, and very soon numerous miniature plants will reward the operator.

These plants are exceedingly ornamental, and are available for various situations. They form, as before remarked, splendid objects in the stove, and they may be removed to the conservatory or greenhouse during the summer, if the direct rays of the sun are excluded. As window plants and living-room plants, they are also equally at home, not at all refusing to grow in a somewhat shady position, and we have even seen them flourishing and producing a charming effect in the open air, planted in a shady rockery amongst Ferns. For an in-door fernery, these plants are peculiarly adapted, the moist air necessary for the development of Fern fronds being the most conducive to their luxuriant growth, and we have frequently seen them so used, and forming groups of the greatest beauty. There are an immense number of varieties of variegated *Begonias*, some kinds resembling others so nearly, that it becomes a matter of difficulty to distinguish them, and as it is useless for an amateur to grow two kinds thus nearly alike, we have endeavoured to describe a few of the most distinct, and those which we consider most worthy of cultivation.

B. dodealea.—This is a dwarf compact plant of great beauty. Leaves obliquely cordate, rich deep green, beautifully netted with deep brown, and fringed at the edges with long pink hairs; when in a young state the leaves are tinged with bright reddish pink. Native of Mexico.

B. grandis.—Leaves large, and tapering to an oblique point; ground colour dark olive green, with a zone of silvery white, the under side a uniform deep crimson, the upper side is clothed with long hairs, which are bright red at the base, with white points; flowers large and very ornamental. Garden variety.

B. Griffithii.—Leaves large, obliquely cordate, dark green variegated with pale green, and bordered with deep purple, fringed with short hairs; in addition, the flowers are large, and very useful for bouquet making. Native of Bhotan.

B. imperialis.—The leaves of this plant are most exquisite, and in addition to which, its dwarf compact habit renders it a veritable gem. Leaves rugose or wrinkled; the ground colour is dark olive green, approaching to black, the course of the veins being marked by bands of emerald green. Native of Mexico.

B. Madame Wagner.—Leaves rich dark green in the centre, which is enlivened by a broad silvery zone. Garden variety.

B. Marshallii.—A superb variety with large leaves; the centre and margins are dark green, the zone which spreads over the greater portion is bright silvery grey. Garden variety.

B. Regina.—The leaves of this fine variety are olive green, ornamented with a zone of red and silvery white, giving it a charming appearance. Garden variety.

B. Rex.—This beautiful plant is a native of Assam, and to its introduction we owe the race of Begonias with silvery zones and spots. It is of robust though dwarf habit; its leaves are dark olive green, a broad band or zone of silvery white traversing it midway between the centre and margin. It is still one of the very best, notwith-

standing the innumerable varieties which have been raised in our gardens from it and its progeny.

B. Roi Leopold.—A large-growing variety. The petioles are long, and clothed with long red hairs; leaves large, reddish crimson in the centre, with a broad border of red. Garden variety.

B. Rollissonii.—This is a very fine kind; the leaves are large, and the vivid shades of green and purple give it a splendid effect.

B. smaragdina.—In habit and size this resembles *B. imperialis*, but the leaves are a uniform vivid green, entirely wanting the deep green which is so conspicuous a feature in that plant. Native of Mexico.

B. splendida argentea.—An elegant plant, with greyish leaves, which are veined with white, and suffused with reddish crimson; a superb plant. Garden variety.

BERTOLONIA.

A genus of Melastomads, of dwarf habit, not remarkable for the size and beauty of their flowers, as many of this order are, but their leaves are most exquisitely marked. From their neat habit, they may be easily accommodated by any one having only a very small stove. The soil best adapted for their culture is a mixture of peat, leaf mould, and sand, in about equal parts. They delight in a close, moist, warm atmosphere, and should have ample drainage. They may be increased by cuttings and seeds, and will require to be kept in a frame, in the stove, or under bell-glasses whilst small, and also to be grown under them if the atmosphere cannot be kept sufficiently humid without them.

B. guttata.—Leaves ovate, from three to six inches long, and from two to three wide; the ground colour

is a rich dark green, profusely dotted with rose coloured spots, which are arranged in lines, and give the plant a charming and interesting appearance. Native of Brazil.

B. margaritacea.—This is another beautiful Lilliputian plant; its leaves are ovate-acuminate in shape, when full-sized, about six inches long, and four in breadth. The ground colour on the upper side is dark olive green, faintly shaded with purple, and upon this are disposed, in regular lines, spots of pearly white; the under side is a uniform bright pink. If the stove is not close and moist, this plant should be protected with a bell-glass. Native of Brazil.

B. marmorata.—An elegant plant, known in many gardens under the name of *Eriocnema marmorata*. It rises upon a short fleshy stem, bearing leaves from five to eight inches long, ovate-oblong in shape, hairy, and five-ribbed, the upper side is vivid bright green in colour, beautifully marked with irregular streaks of pure white, the under side is of a uniform rich purple. Native of Brazil.

B. pubescens.—The leaves of this miniature plant are ovate-acuminate in shape, from three to four inches long, and two or three broad; they are bright light green, with a broad chocolate coloured band down the centre, the upper surface is clothed with long white hairs. Native of Ecuador.

BORASSUS.

Of this noble, but small genus of Palms, two species only are known. The genus is distinguished by its flowers, which are unisexual, and produced upon distinct plants, the males being borne in dense branching catkins, while those of the opposite sex are produced on simple,

or more rarely slightly branched spikes. The fruits are very large, three-seeded. The leaves are fan-shaped or nearly circular, and the stems stout, straight, and massive, some sixty to eighty feet in height (some say much more), and from one to two feet in diameter. These plants should be grown in loam and sand, with a small portion of vegetable mould added. They are increased by seeds only, and are exceedingly rare in cultivation.

B. Ethiopum.—This, the African Fan Palm, grows to eighty feet in height, but trees of such dimensions must be exceedingly aged, for they are very slow to form a stem. This plant is easily distinguished from its Asiatic relative, by the remarkable bulging out or swelling in its stem near the middle, or about two-thirds of its height from the ground. The leaves are nearly circular and plaited, supported upon stout petioles from six to seven feet in length; in a young state this is an exceedingly handsome plant, and is at present extremely rare. The fruits, which are as large or larger than a cocoa-nut, contain three seeds, which are gathered as vegetables soon after germination, and are said to be very agreeable eating. Travellers tell us that elephants are always to be found near these trees, as they are exceedingly fond of its seeds. Toddy is extracted from its stem, and mats, baskets, and hats are made from its leaves. It is abundantly distributed in various parts of Western Tropical Africa, mostly by river banks, although in some places it approaches the sea coast.

B. flabelliformis.—Of this noble Palm a native poem, in describing its beneficial properties, records nearly one thousand uses to which its products may be applied. It is a gigantic tree, reaching eighty feet or more in height,

and two feet in diameter; the leaves are nearly circular, and plaited like a partially open fan, and have about seventy ribs, which radiate from a common centre. As young plants (which are the only specimens of this genus existing in this country), this is exceedingly handsome, but they are very rare and very slow in growth. The sap produces a very intoxicating toddy, from which sugar of superior quality is made, and largely imported into this country, whilst its leaves are used for hats, baskets, and mats, umbrellas, fans, bags, and also in the manufacture of a very nice kind of matting for floors, as well as for thatching, &c., &c. It is found principally near the sea, on low-lying sandy tracts, widely distributed throughout Asia.

BRAHEA.

A small genus of low-growing Palms with fan-shaped leaves, and having perfect flowers. The species we here describe is admirably adapted for the decoration of the greenhouse or the sub-tropical garden during the summer months. It should be potted in equal parts of peat and loam, to which should be added a good portion of sand; drain the pots well, and supply them liberally with water.

B. dulcis.—The stem of this plant is somewhat stout, but it takes a very long time to develop; the petioles are clothed with a woolly tomentum, armed at the edges with small close-set spines, and enveloped at the base in a network of brown fibres. The leaves are nearly circular, plaited, and of a bright shining green colour. It is a splendid greenhouse Palm, somewhat rare in cultivation. Native of Mexico.

BREXIA.

This is a small genus of plants giving its name to the order to which it belongs. In their native wilds they assume the form of trees with nearly simple stems, and at home elegant ornaments for the stove. During the summer *Brexias* may be grown in the conservatory, and even make pretty objects in the sub-tropical garden, if a snug and shady corner be allotted them; when young they are admirable table decorators, and very useful for the decoration of apartments. *Brexias* should be potted in a mixture of loam and peat, in the proportion of two parts of the former to one of the latter, adding a little sand to keep it open; a liberal supply of water should be given at all seasons. Cuttings and eyes strike quickly if kept close and shaded until they are rooted, and then soon become handsome young plants.

B. chrysophylla.—A handsome plant with a slender erect stem, clothed with long, somewhat narrow, yellowish green leaves, which are pendent, and slightly spiny at the margin. It is a very desirable plant, well deserving general cultivation. Native of Madagascar.

B. madagascariensis.—The present species resembles somewhat the preceding, but the leaves are light green, and nearly or quite smooth at the edges, distinct and handsome. Native of Madagascar.

B. spinosa.—This is the most handsome of all the species yet introduced. The stem is slender; leaves alternate, pendent, from twelve to twenty inches in length and two inches in breadth, toothed with spines at the margins, dark green on the upper side, slightly paler below. It is a beautiful plant for the decoration of apartments, or for the dinner table. Native of Madagascar.

CALADIUM.

A genus of highly ornamental plants, of very easy growth. The greater number of the species are deciduous, and therefore occupy but little space during the winter months, which is a great advantage, as at that season of the year most amateurs find their plant houses rather crowded, because then all tender plants must have protection. *Caladiums* require to be potted in turfy loam, peat, leaf mould, and well-decomposed manure, in about equal parts, adding some river or silver sand; drain the pots well, as they luxuriate in an abundant supply of water and strong heat. The size of pot, and number of shifts necessary, must be entirely regulated by the size of the specimens required: if only small plants are needed, then plant them in less rich compost and keep them in small pots; but if size is the object, then it is scarcely possible to be over liberal with them. We have had a great number of new forms of these plants during the past few years, many of them exquisitely coloured, but in most instances they are but variations of some previously known kind. The roots of *C. bicolor* are said to be cooked and eaten, and are called "coco-roots" by the people who use them.

After the beauty of these plants begins to fade, less water should be given, gradually decreasing the quantity until it is entirely withheld. By this time the foliage will all be dead and the roots at rest, and we wish particularly to warn amateurs respecting their treatment at this period. It is the common practice to stow them away upon shelves, quite dry, and thus they remain for several months—that is, until the spring. Now it frequently happens, that when the bulbs are turned out for potting at this season, nothing

but the outside shell remains ; this is what we designate dry rot, and to steer clear of this evil, we advise their being kept under the stage in the stove all the winter, or in some warm place where water can be given occasionally. In this way even the smallest-rooted kinds will be found whole and sound at the potting season. They are increased by divisions of the roots, which is most safely accomplished before growth commences. Many of the kinds here enumerated have been introduced from Para, and other parts of South America, and others are the results of cross-breeding at home ; but although many are introduced, they probably are crossbreeds in their native country, which is Tropical America.

C. argyrites.—This is at once the smallest and most elegant species of the whole. The leaves are small in size, sagittate in shape, with the ground colour light green, the centre and margins of the leaf white, with many irregular blotches scattered over the remaining portion. It is a beautiful ornament in the stove, and a perfect gem as a decorator of the dinner table, whilst many of its leaves are useful for bouquets. Native of the banks of the Amazon and its tributaries in South America.

C. Baraquinii.—A variety of good robust habit, and very distinct ; the leaves are from twenty to thirty inches long, the centre of the leaf deep red, the margin being dark green. From Para ?

C. Beethoven.—Ground colour of leaf white, beautifully netted with bright green ; the mid-rib rosy pink. A very pleasing form of this popular genus, of garden origin.

C. Belleynei.—A veritable gem for summer decoration, its large sagittate leaves being nearly wholly white, and beautifully relieved by the vivid green network of

veins which pervade them, in addition to which they are often tinged with delicate rose. From Para ?

C. Chantinii.—A most showy and beautiful form, of robust habit; the greater portion of the leaf is brilliant crimson, irregularly blotched with white, and margined with dark green. From Para ?

C. Chelsoni.—Leaves large, centre light rose, speckled more or less with silvery dots, the remaining portion suffused with bright red, and blotched with vermilion; the margin is a clear deep rich green. Garden variety.

C. Dr. Lindley.—An elegant variety, the leaves of which are rich bright green towards the margin, upon which are dispersed spots and blotches of rose; the centre of the leaf is deep crimson. Garden variety.

C. Duc de Cleveland.—A highly ornamental and distinct variety, producing fine bright green leaves, spotted with rose; the mid-rib and veins are a deeper shade of the same colour. Garden variety.

C. Duc de Nassau.—The leaves of this variety are a pleasing emerald green round the margins, spotted with white, the centre and primary veins are bright red; a handsome and desirable kind. It is of garden origin.

C. Emmeline.—A delicate light green ground, with scattered spots of white and crimson, are the distinguishing characters of this crossbred variety.

C. Emperor Napoleon.—Centre of leaves bright flame colour, running out in flakes towards the edge; the margin is rich green, with beautiful carmine spots. A most desirable garden variety.

C. Hercules.—This variety has the centre of its leaves grey, outer portion dark green, which is spotted and blotched with bright red; the mid-rib and veins are rich crimson. Of garden origin.

C. imperialis.—The margin of the leaves in this form is dark green, the centre is rose colour, with conspicuous red veins, and over the whole surface are distributed spots and blotches of white. Garden variety.

C. Louise Poirier.—Green margins, with white spots, and the centre crimson, render this variety very pleasing and highly ornamental. Of garden origin.

C. Lucy.—This is a very attractive variety, the markings being very brilliant. Mid-rib and primary veins broadly margined with deep crimson; the ground colour of the leaf dark green, spotted and blotched irregularly with rosy carmine. Of garden origin.

C. Lurline.—A very delicate and pretty form, with light green leaves, most profusely spotted with white; a very desirable and distinct kind, of garden origin.

C. magnificum.—A variety with bright green leaves, profusely spotted with pure white, the mid-rib and primary veins tinged with reddish pink. Garden variety.

C. M. Alphand.—The ground colour of the leaf is bright green, spotted and blotched with rosy vermilion; the mid-rib and primary veins are bright vermilion, having numerous silvery spots on either side. A very showy variety of garden origin.

C. Meyerbeer.—This is a very ornamental kind. The ground colour is white, beautifully veined with bright green; the mid-rib is deep red. It is in the way of *C. Belleyme*, but quite distinct and superior. Garden variety.

C. Miltoni.—The centre of the leaf grey, and margins deep green, the latter colour being profusely spotted with crimson, the veins all marked with red, rendering it peculiarly attractive. Garden variety.

C. mirabile.—A charming variety, with large broad leaves; ground colour bright light green, beautifully dot-

ted and spotted with pure white over the entire surface. A distinct and highly desirable kind. From Para.

C. Reine Victoria.—In general style this resembles the elegant *C. Belleymeii*. The margins and veins are a bright lively green, between which the white ground is beautifully marbled and spotted with rich crimson. A most desirable and handsome form, of garden origin.

C. Theresa.—The ground colour of leaf light green, veins rose coloured, irregularly blotched with white and suffused with pale rose towards the centre. A very delicate and desirable variety, of garden origin.

C. Troubetzkoy.—This is a variety of smaller growth than most of the kinds. Its leaves are also very much narrower, and the lobes are large and ear-like, which gives it a peculiar and most distinct appearance; the ground colour is grassy green, over which are irregularly scattered spots and blotches of white and red, the mid-rib being rich carmine. From Para.

C. Verschaffeltii.—A variety of moderate growth, with large somewhat heart-shaped leaves, the ground colour of which is brilliant green, the entire surface being irregularly spotted with bright red. From Para.

C. Wallisii.—This variety has dark olive green leaves, with large irregular-shaped spots and blotches of the purest white, and the veins all yellowish white.

C. Wightii.—One of the most pleasing varieties, from the brightness and distinctness of its markings. The leaves are large and broad, rich deep green, profusely dotted with spots of pure white and bright red, but neither colours are mixed together. From Para.

CALAMUS.

An extremely elegant and interesting genus of Palms, containing many species. They are divided into two genera by some authors, viz.:—*Calamus*, having the flowers densely clustered upon branching spikes, each branch having a separate spathe, which is not sufficiently large to enclose it; and *Dæmonorops*, having its flowers scattered along the spikes, not clustered, the spikes being also enclosed in separate spathes, which quite envelop them. These are the chief points of distinction, and if they were definite, would be sufficient to identify them, but as all sorts of intermediate forms are to be found, it becomes extremely difficult to decide where one ends and the other begins; therefore we think it preferable for this work to retain the original genus intact. These plants are all of slender growth. Many of them climb to the tops of the highest trees in their native forests, and often extend for several hundred feet; others, however, do not exceed fifteen or twenty feet in height. The flowers are produced upon branching spikes, clustered or scattered, each branch enclosed in a separate spathe, which entirely or only partially encloses it. The flowers are small, greenish rose in colour, and have both calyx and corolla three-parted. Fruits one-seeded, clothed with smooth shining imbricated scales. The species of *Calamus* are very effective in a young state as decorators of the dinner table or the drawing room; they also form beautiful specimens for the ornamentation of the stove, or for public exhibition. They are increased by suckers which grow out from the base, and also from seed. Loam and vegetable mould in about equal parts is a good compost

to grow them in, and to keep them in a flourishing state a copious supply of water is necessary.

C. accidens.—A slender-growing and beautiful miniature tree, with long arching dark green pinnate leaves, the pinnæ being long and narrow, and somewhat closely set; petioles furnished with slender black spines. At present somewhat rare, but deserving attention by all plant growers. Native of East Indies.

C. adpersus.—An exceedingly slender and elegant species, with stem not much stouter than a large wheat straw; petioles six or more inches long, sheathing at base, and clothed with long slender black spines; leaves pinnate; pinnæ six to eight inches long, narrow, and deep green in colour. Native of East Indies.

C. asperimus.—A beautiful species, eminently adapted for general decorative purposes. It attains considerable size, and as it throws out quantities of suckers, it forms a fine handsome mass. The leaves are pinnate, from three to twelve feet in length; pinnæ from one to two feet in length, and about an inch in breadth, pendent, light green in colour, and furnished on the upper side with two rows of hair-like spines; petioles broadly sheathing at the base, and densely armed with long stout black spines. It is a native of Assam, Sylhet, and Chittagong.

C. ciliaris.—This is a very distinct and handsome small-growing kind. The stem is erect and slender; leaves pinnate, clothed with a quantity of soft hairs; petioles sheathing at the base. The bright light green of the plume-like leaves renders this species a charming object wherever a slender graceful plant can be placed. Native of the Indian Islands.

C. Draco.—In this plant we have a robust constitution, and the habit is totally different from the preceding.

Leaves four to six feet in length, beautifully arched, pinnate; pinnae twelve to eighteen inches long, narrow, slightly pendent, and rich dark green in colour; petioles sheathing at base, and armed with long, flat, black spines. It is a superb plant. Native of the Indian Islands.

C. flagellum.—Stem slender; leaves six or eight feet in length when full size, pinnate; pinnae pendent, about twelve inches in length and one in breadth, dark green, and furnished on the upper side with two rows of long white hair-like spines; petioles sheathing, and profusely armed with stout spines, which are white, tipped with black, and much swollen at the base. It climbs to the tops of the highest trees in the forests of Sikkim, and is found growing from the level of the plains to upwards of 3,000 feet elevation. Its native name is "Reem."

C. hystrix.—This is another small, compact-growing, graceful plant, with pinnate leaves and spiny petioles. It bears some resemblance to *C. melanochaetes*, but is more handsome than that species.

C. Jenkinsianus.—Leaves pinnate, beautifully arched, and from two to six feet in length; pinnae from six to twelve inches long, an inch broad, and rich dark green. The petioles are slightly sheathing at the base, where they are dark brown, and armed with long flat spines. This beautiful species is widely distributed in the forests of Sikkim.

C. Lewisianus.—A superb and somewhat rare plant. In the young state the leaves are nearly erect, ultimately spreading, from two to six feet in length, pinnate, and bearing some three dozen pairs of pinnae, which are from six to twelve inches long, and less than an inch in breadth, pendent, and dark green; petioles and leaf stalk white,

except the broad sheathing base, which is blackish brown, and densely armed with long, black, flat spines, sometimes arranged in threes, more frequently, however, in pairs. Native of the East Indies.

C. melanochaetes.—The whole plant is of a very dark green; leaves pinnate, the pinnæ long, narrow, and pendent; petioles sheathing at the base, and there armed with very long and sharp spines, the bases of which are much swollen, and green, the tips brown; an exceedingly beautiful plant. Native of the East Indies.

C. plumosus.—An exceedingly beautiful species. Its arching feathery leaves are pinnate, and from two to four or more feet in length; pinnæ twelve inches long, less than an inch wide, tapering to a tail-like point, very deep green, and pendent; the petioles are densely armed with stout black spines, white at the base. It is one of the most beautiful of the genus, and is a superb plant for the decoration of the drawing room. Native of the East Indies.

C. Rotang.—This plant is said to climb to the tops of the highest trees in its native forests, and to continue to extend several hundred feet in length. As a young plant we shall have most to deal with it, and in this state it is very elegant. The stem is slender; leaves pinnate, from one to three and four feet in length, and beautifully arched; pinnæ six to twelve inches long, less than an inch broad, and dark green, furnished on the upper side with two rows of fine hair-like spines; petioles and stem armed sparingly with stout somewhat reversed spines. Native of India.

C. Royleanus.—A species of great beauty. Leaves pinnate and arching; pinnæ very numerous, narrow, pendent, and full deep green; petioles also dark green, sheathing

at the base, and sparingly clothed with spines. The present plant deserves a place in every collection of ornamental-leaved plants. It is a native of Deyra Doon, in the North West Himalayas.

C. viminalis.—Stem slender; leaves one to two feet in length, pinnate, and bearing some twenty-six pairs of pinnae, which are about six inches in length, narrow, and light green; the petioles are sheathing, and densely armed with long flat white spines. It is a very handsome plant, throwing out its whip-like spiny spikes of flower when only one or two feet in height. Native of the Indian Archipelago.

CALYPTROGYNE.

A small genus of Palms nearly allied to *Geonoma*, and which require the same treatment as that recommended for those plants.

C. Ghiesbreghtii.—This is an elegant dwarf-growing Palm, and one which should be in every collection. It is a species which apparently never makes much stem. The leaves are about five feet in length, pinnate, and beautifully arched; pinnae mostly opposite, but sometimes alternate, bright shining green above, paler below. It forms a splendid crown of pendent leaves, from amongst which rise its erect lance-like flower spikes. Native of Chiapas.

C. spicigera.—Stem stout; leaves irregularly pinnate, from two to three feet long, and one foot broad, deeply bifid at apex, and rich bright green in colour; petioles short, sheathing at the base, flat on the upper side, rounded below. It is a very elegant plant, well deserving general cultivation. Native of New Grenada.

CANNA.

The plants comprising this genus will be familiar to most of our readers by the popular name of Indian Shot, which name they have received from the hardness of their round black seeds. They belong to the order *Marantaceæ*, and many of them are remarkable for the beauty of their flowers, but it is chiefly for the charming contrast their leaves afford in the open air during summer that we have introduced them here; and so robust has their constitution become through cross-breeding, that the greater portion of the varieties described here are capable of withstanding the severity of our ordinary winters unharmed, if the ground is properly prepared and covered in winter. To do this, remove the soil for a considerable depth, and fill up to within about a foot of the surface with rough drainage material, such as bricks, &c., over which put some good rich open loam, with a slight admixture of leafy mould, well decomposed. In this manner they may be used with advantage, either as groups in the centre of flower beds, in large beds by themselves, or as isolated groups upon the lawn, &c., &c. They are propagated by division of the roots and by seeds.

C. Achiras variegata.—This is a charming variety for in-door culture. It is of medium height, having its bright green leaves striped with white and yellow; it will grow in the open air during summer, and retains its character, but it will probably not be effective enough for sub-tropical gardening.

C. Annæi.—A charming kind, growing from six to ten feet high. The leaves are long, tapering to a sharp

point, stand somewhat erect, and are of a light glaucous green colour. Its bronzy yellow flowers are produced in abundance; in addition it is of a robust and hardy constitution.

C. Annæi rosea.—This variety is less robust in habit than the preceding, as it seldom exceeds five feet in height; the ground colour of the leaf is dark green, the mid-rib and margin being dark bronze; the flowers are reddish purple. It is a very hardy kind, and is one of the best for planting in the sub-tropical garden.

C. Auguste Ferrier.—A very fine variety, but one that we have not seen so much grown as it deserves. It is of a good robust habit, and produces very large leaves, which are bright green, margined with deep bronze.

C. aurantiaca splendida.—This variety is of good robust habit, and usually grows six feet high. The leaves are broad, tapering suddenly to a sharp point, rich dark green in colour. The flowers are small and inferior, but irrespective of this it is a most effective kind in the open air.

C. atronigricans.—A very beautiful kind, growing from two to three feet high, with large deep reddish brown leaves; it is a beautiful ornament to the conservatory, for hall decoration, and also as a window plant, but it has hitherto proved rather delicate for the open air.

C. Bihorelli.—If it is possible to say one variety is better than all the others, we should be disposed so to speak of the present one; certainly it is a charming plant. It grows from two to three feet high; the stems very dark; the leaves, when young, red, changing with age to deep bronze, while the flowers are deep crimson, produced upon branching spikes in great abundance. A superb plant for either in or out-door decoration.

C. Caledoniensis peltata.—A variety we have at present

not seen used much for planting in the open air, but in all probability it will prove of good constitution; it is a fine conservatory plant, somewhat tall in its habit, producing abundance of its broad dark green leaves.

C. Daniel Hoibrenk.—This variety is of medium height, producing large leaves, which are broad at the base and taper to a sharp point; ground colour bright green, with a slight margin of bronze. The flowers are large and abundant; petals broad, and rich orange in colour.

C. discolor floribunda.—This fine variety grows from four to five feet high. Leaves broad, somewhat ovate in shape, bronzy green in colour, with a very dark margin; it also produces its rich bright scarlet flowers in abundance. Undoubtedly this is one of the very best of the dark-leaved varieties for planting in the open ground.

C. expansa.—A plant seldom exceeding three feet in height, and producing a beautiful effect when used as an edging to some of the larger-growing kinds. *C. expansa* has deep bronzy leaves, which are doubly charming when contrasted with some of the green-leaved varieties. The flowers are small, dark red in colour, but not freely produced, which is of little consequence, as they are not wanted with such fine foliage.

C. involventia.—A noble-growing variety, resembling a *Musa* somewhat in its style and habit of growth. It usually grows some six feet or more high, with very large and broad leaves, which are of a bright dark green colour. Although of very free growth, this kind rarely blooms in the open air; it is, however, a splendid sub-tropical plant of stately habit.

C. iridiflora hybrida.—This highly ornamental variety we have not seen in bloom. It produces very broad and very dark leaves, which are recurved in a graceful

manner, thus giving it a thoroughly distinct and beautiful appearance, when grown for in-door decoration, or planted out as a sub-tropical plant.

C. limbata.—This is a very hardy kind; it grows from six to ten feet high, and produces large bright dark green leaves. A beautiful ornamental plant in the sub-tropical garden.

C. Madame Annæi.—Of very erect habit, attaining the height of about five feet; the leaves are narrowly margined with bronze, with a mid-rib of the same colour; flowers small, deep red.

C. maxima.—A most distinct-looking plant, growing ten feet high or more. The leaves are somewhat obovate, and bright green in colour. Where room can be given this plant, it is very ornamental during winter, for then it blooms profusely.

C. metallica.—A variety growing from five to six feet high. The leaves are broad, bronzy green in colour, the mid-rib and primary veins being deep bronze. The flowers are bright red, freely produced, but are somewhat small. A handsome kind for the conservatory or open air.

C. metallicoides.—A superb plant for in-door decoration, but we cannot speak confidently of its merits as an out-door grower; it produces fine large leaves, which are rich bronze even in a young state.

C. nigricans.—This is a superb variety. It attains the height of five or six feet, and produces very broad leaves, which are rich dark bronze, in addition to which it is an abundant bloomer. The flowers are deep scarlet, rendering it a most attractive object either in the conservatory or the sub-tropical garden.

C. peruviana.—This is a magnificent kind, of stately growth, attaining the height of nine or ten feet. The

leaves are large, and of a bright glaucous green. In addition to the charm of its foliage, it is an abundant bloomer, producing quantities of branching spikes of bright flame red flowers. A highly ornamental plant either for conservatory decoration, or for planting in the open air.

C. picturata fastuosa.—A superb and very distinct variety, growing about five feet high; the leaves narrow and bright green. It is a very free bloomer, the spikes being branched, and producing in profusion its large flowers, which are yellow on the outside, whilst the inside is yellow, beautifully mottled with crimson. It is a very desirable plant, and succeeds admirably in the open air.

C. Prémices de Nice.—This is a beautiful form, growing about eight feet high. The leaves are very broad, and glaucous green. It is a free bloomer, producing in abundance its large rich bright yellow flowers, and is very desirable for either in-doors or the open air.

C. Van Houttei.—This is a really fine variety. It grows from six to eight feet high; leaves very long, lanceolate, dark green, margined with bronze. The flowers are produced most abundantly, very large, and of an orange scarlet colour. Undoubtedly this is one of the very best of the semi-dark kinds.

CARLUDOVICA.

A genus of low-growing Palm-like plants, which are often considered and grown as Palms, but which belong to the Cyclanth division of the Pandanads. From the young leaves of one species, the famous Panama hats are made. *Carludovicas* are very ornamental, soft and totally unarmed, and may be used with advantage in the greenhouse or sub-tropical garden during the summer. They should be potted in soil composed of two parts peat,

and one part sandy loam, and treated to a liberal supply of water. These plants are increased by seeds, by suckers, and divisions of the old plant.

C. atrovirens.—This is a superb ornament in the stove, and during summer, indeed, it forms a beautiful object in the sub-tropical garden. The petioles and leaves are intense deep green, quite smooth, and deeply bilobed. It should be grown in any collection of ornamental-leaved plants.

C. humilis.—The present is one of the most beautiful of the whole genus, but at the same time it is at present a rare species. The blade of the leaf is from twelve to eighteen inches long, and from nine to twelve inches broad in the widest part, rhomboid, deeply bifid at the apex, and rich deep green in colour. This superb plant is a native of New Grenada.

C. palmata.—A very ornamental plant, with palmate leaves, between two and three feet across, bifid at apex, and divided quite down to the point of attachment into four lobes, each of which is divided at the apex into narrow segments; the petioles are from four to six feet in height, round, quite smooth, and, as well as the blade, rich dark green. It is very suitable for the sub-tropical garden during summer. This is said to be the species from which the celebrated Panama hats are made, although they are not made in Panama. Native of Peru and New Grenada.

C. purpurata.—This plant, like most of the genus, rises upon a short stem with age. The petioles are from two to four feet in height, smooth, and reddish purple, especially towards the base; the blade is from twelve to eighteen inches in breadth and upwards of two feet in length, bifid at the apex, tapering towards the base, and deep

green. It is a splendid ornament to the sub-tropical garden in summer. Native of Tropical America.

C. rotundifolia.—A very elegant species, which grows from three to six feet in height. The whole plant is smooth, and of a bright green colour; leaves flabelliform, divided in two places quite down to the point of attachment, which gives them a somewhat trilobed appearance; the lobes are cleft into segments, which are pendent, and give a graceful and beautiful appearance to the whole plant. It is admirably adapted for table decoration in a young state. Native of Costa Rica.

CARYOTA.

A genus of noble Palms, which, as far as we are aware, is the only one in the order which bears bipinnate leaves. These plants are all deserving cultivation, for even the tallest species are a long time attaining an inconvenient size. The flower spike is very large and drooping, the sexes being in separate flowers, though both are produced on the same spike. The flowering is continued from the top downwards, a spike of bloom issuing from the axil of every leaf in succession until the lowermost one is reached, soon after which the plant dies. *Caryotas* are found in a state of nature at considerable elevations, one species being found in Sikkim, at 4,400 feet altitude, and thus it will prove sufficiently hardy to decorate the sub-tropical garden in the summer season, where its bipinnate leaves, and cuneate erose pinnae, will afford a very distinct and tropical effect. They are also elegant when young, and well adapted for the adornment of the dinner table or apartments. These plants should be potted in loam and vegetable mould in equal parts, adding a little sand; drain well, and during the growing

season give a liberal supply of water. They are increased by seeds, which are frequently produced in this country, and also by suckers. *Caryotas* yield toddy, from which a quantity of sugar is obtained, and a farina resembling sago, as well as a material known in the commercial world as Kettul fibre.

C. Cumingii.—This plant is named in honour of Hugh Cuming, the celebrated naturalist and collector of specimens of all branches of natural history, and who was the first to make known the present species. The plant now under consideration is the most elegant, and perhaps the dwarfest in the genus, and on this account it will specially recommend itself to amateurs. The stem is slender, usually growing about ten feet high, exclusive of its crown of leaves, which are bipinnate, and when fully developed, from four to six feet in length and three feet in width; the pinnules are sub-coriaceous, sessile, somewhat falcate, and obliquely cuneate, with præmorse ends, bright dark green on both surfaces. When in fruit, the drooping spadix and bright red berries lend an additional charm to this highly ornamental plant, although the fact of its flowering is a certain forerunner of death. It is a native of the Philippine Islands.

C. furfuracea.—This plant resembles *C. urens* in its habit, but is more compact; the petioles are not so long, and it usually bears a larger quantity of leaves than that species. Leaves bipinnate; pinnæ unequal in size and shape; the petioles clothed with a rusty tomentum. It is admirably adapted for the decoration of apartments. Native of Java.

C. Rumphiana.—This appears to be one of the most handsome, and at the same time the most distinct species. We are unable to say what height it attains, but the

stem is tolerably stout; leaves bipinnate, from three to eight feet in length, spreading; pinnules sessile, somewhat coriaceous, obliquely cuneate and præmorse, from four to six inches in length, and as much in breadth at the widest part, and full deep green. The pinnules lie very flat and even, which distinguishes it from all the other species, whose leaflets mostly stand oblique. Native of the Indian Archipelago.

C. sobolifera.—An elegant species, with a slender stem, bipinnate leaves, and bright light green pinnæ; the petioles when young are clothed with a short black scaly tomentum, which, however, falls off with age. It is a dwarf plant, but still somewhat larger than *C. Cumingii*. Suckers are produced from the base very freely, thus affording small plants for in-door decoration. It flowered for the first time in England in the year 1856, and continued flowering down the stem for three years; when the last flowers of the lowermost spike reached the ground it died. It is a native of Malacca.

C. urens.—As far as our experience goes, this is the largest-growing species in the genus, frequently reaching fifty feet in height, and sometimes, we are told, much more. From the stem of this plant a coarse kind of sago is obtained, and it also yields a great quantity of Palm wine, which has obtained for it the name of Toddy Palm. Stem stout; leaves bipinnate, spreading, from three to twelve or more feet in length; pinnules obliquely cuneate, sub-coriaceous, erose, caudate, from six to nine inches in length, two to four inches in breadth, and dark green in colour. It flowered for the first time in England in the year 1861, and continued flowering downward until it died. In addition to its being so well adapted for stove and greenhouse decoration, it is equally

ornamental in the sub-tropical garden. It is a native of the East Indies.

CEPHALOTUS.

This genus is the only one in the order to which it belongs, and only includes one species. It is a dwarf almost stemless plant, which is found growing in marshy grounds on the north east coast of Australia. The soil for the cultivation of this plant should be peat and living sphagnum moss, in about equal parts, and the pot should be placed in a pan of water and stood at the warm end of a greenhouse, or cool end of the stove. Propagation is effected by seeds.

C. follicularis (the New Holland Pitcher Plant).—Is a dwarf compact little plant, with scarcely any stem. The leaves are stalked, somewhat oblong or elliptical, and flat; from amongst these are produced numerous petiolate dilated ones, which resemble the ascidia of the genus *Nepenthes*. These ascidia, or pitchers, vary in size from one to three inches in length, according to the skill of the cultivator, and are dark green, tinged with blackish purple; the mouth is ornamented with an annular disc, and the lid is netted with veins of reddish pink. This beautiful plant deserves general cultivation. Native of Australia.

CERATOLOBUS.

The present genus of Palms contains a few slender-growing species of great beauty. They are nearly allied to *Calamus* and *Plectocomia*, and require similar treatment to those plants. The kind given here is a very ornamental plant, well deserving general cultivation, as also are several species which have never reached our gardens in a living state. They are natives of the Indian Archipelago.

C. glaucescens.—An elegant *Calamus*-like plant, with pinnate leaves from one to two feet long; pinnæ somewhat cuneate, and lengthened out into a tail-like point, the edges erose, dark green on the upper surface, grey below; the petioles are sheathing, and densely armed with slender spines. A beautiful plant for the adornment of the drawing room or dinner table. It is a native of Java.

CERATZAMIA.

A genus of *Cycadeaceæ*, distinguished from *Zamia* by having the thickened apices of the scales of the male and female cones bicornute, instead of hornless. They have short trunks and articulated leaflets. The culture is the same as in *Zamia*.

C. Küsteriana.—The stem of this plant we have not seen, but it suckers very freely, and can easily be increased by this means. Leaves from two to four feet long, perhaps more, pinnate, spreading; pinnæ semi-lunate, tapering to a sharp point, coriaceous, from six to ten inches in length, about half an inch in breadth, and dark green. Native of Mexico.

C. mexicana (mas.).—In the male plant the leaves are pinnate, about six feet in length; the petioles are spiny for about half their length, and very stout at the base; pinnæ coriaceous, sessile, cordate-lanceolate in shape, tapering to a sharp point, from nine to twelve inches in length, one and a half in breadth, and dark green in colour. Native of Mexico.

C. mexicana (fem.).—This differs somewhat from the preceding. The stem is stout; leaves pinnate, from three to four feet in length, and pendulous; the naked portion of the petiole armed with short white spines;

pinnæ six to ten inches long, tapering to a point, and rich dark green on both surfaces. Native of Mexico.

C. Miqueliana.—Stem slender; leaves pinnate, spreading; pinnæ coriaceous, oblong, suddenly and abruptly tapering to a point, six to twelve inches in length, and two in breadth, but tapering somewhat towards the base, and dark green. It is a very distinct and handsome species. Native of Mexico.

CEROXYLON.

This is the Wax Palm of Humboldt, who mentions having seen it a hundred and eighty feet high upon the Andes of New Grenada. From this plant is obtained a wax of a highly inflammable nature. This genus is nearly allied to *Iriartea*, but is distinguished by having an entire spathe, which quite covers the flower spike; the flowers are sometimes perfect, at other times unisexual; sepals and petals three-parted. Fruit one-seeded. It forms a magnificent object either for public exhibition or home decoration. The soil best adapted for its culture is loam and peat in about equal parts. As an ornament to the sub-tropical garden, the *Ceroxylon* is unequalled, but it must be sheltered from rough winds and the direct rays of the sun.

C. andicola.—This is an extremely grand plant, well adapted for greenhouse decoration, or for sub-tropical gardening in the summer season, although it grows more rapidly in the stove. In its native country it attains immense proportions; in cultivation, as far as we know, it has made but little stem. The leaves are pinnate, from two to twelve feet in length; the petioles are erect, somewhat ferrugineous at the base, slightly arching at the apex; pinnæ acuminate, two feet in length, and an

inch and a half in breadth, standing straight out at right angles from the mid-rib, and clothed to within a few inches of the base. The upper side is a full, deep shining green, while the lower side is silvery white. This plant flowered for the first time in this country in the year 1858. It is found in the forests of New Grenada.

CHAMÆDOREA.

This is an exceedingly elegant genus of Palms, and comprises many species, all slender small-growing plants, which are admirably adapted for the decoration of apartments, or the dinner table, their hardiness of constitution, and their rich shining green and elegant pinnate leaves, rendering them charming objects in such situations. The leaves of *Chamædoreas* are pinnate, or rarely entire. The flowers are produced upon long, simple, or branching spikes (which in some species are very ornamental), male and female upon separate plants. Fruits small and one-seeded; whole plant destitute of spines. This genus is similar in many respects to *Geonoma*, the species of both genera being found invariably growing under the shade of tall forest trees, and never in exposed situations. The soil best adapted for *Chamædoreas*, is spongy peat two parts, loam one part, sand one part, well mixed together, and the plants should be liberally treated to water.

C. Arenbergii.—Stem slender; leaves pinnate, from two to three feet in length; pinnæ twelve inches long and about four broad, pendent, tapering to a tail-like point, and bright green in colour. This is an elegant plant for general decorative purposes. Native of Guatemala.

C. brevifrons.—A very distinct compact-growing species. Stem slender; leaves pinnate, arching, and from twelve to eighteen inches in length; pinnæ sessile, between one

and two inches broad, tapering to a point, and dark green. Native of New Grenada.

C. desmoncioides.—This is to be found in some collections under the name of *C. scandens*, and after reaching five or six feet in height, it deserves that name, as it then becomes a climber. In a young state, however, it is very elegant. Leaves pinnate, from two to three feet long; pinnæ some twelve inches long, and one and a half in breadth, pendent, and dark green. Stem slender, and, as well as petioles, glaucous. It is a beautiful table decorator. Native of Mexico.

C. elegans.—As its name implies, this is an elegant plant. The stem is stouter than any of the previously described kinds; leaves pinnate, and from two to four feet in length, and beautifully pendent; pinnæ six or nine inches long, and one inch broad in the centre, tapering towards each end, and bright dark green on both surfaces; petioles somewhat carinate, and sheathing at the base. Native of Mexico.

C. Ernesti-Augusti.—The stem of this species is about the size of an ordinary walking cane; the leaves are rich dark green, and entire, broader than those of most of the genus, being some two feet long, and one broad, deeply bifid at the apex; the flower spikes are bright orange scarlet, and render the plant extremely ornamental while they last. Native of New Grenada.

C. geonomiformis.—A most beautiful dwarf-growing plant. Stem slender; leaves entire, bifid at the apex, from six to twelve inches in length, and four or five in breadth, dark green. Native of Guatemala.

C. glaucifolia.—An elegant slender-growing species; the leaves are long and pinnate; pinnæ narrow, long, and slender, giving them the appearance of beautiful plumes;

the ground colour is dark green, suffused with a glaucous hue. It is one of the most elegant for the decoration of apartments or the dinner table. Native of Guatemala.

C. graminifolia.—This is perhaps the most graceful species of the whole genus. Stem reed-like; leaves pinnate, from two to four feet in length, rich dark glaucous green, and beautifully arched; pinnæ upwards of a foot in length, and less than half an inch in breadth, the whole plant presenting the appearance of a plume of feathers. For the decoration of apartments or the dinner table it is superb. Native of Costa Rica.

C. lunata.—An elegant species, with moderately stout stem and long dark green leaves, with somewhat lunate pinnæ. It is a very serviceable plant for table decoration, for the drawing room or ball room, and like the majority of this genus, deserves general cultivation for this purpose alone. Native of Tropical America.

C. macrospadix.—The species now under consideration is one of the largest growing in the genus. The stem is somewhat stout; leaves pinnate, upwards of four feet in length, beautifully curved; pinnæ twelve to eighteen inches long, by two broad, dark green in colour. It is a fine handsome plant. Native of Costa Rica.

C. Martiana.—This is a dwarf spreading plant, and coming from a cool locality, it is especially useful for room decoration. It produces many little dichotomous stems; leaves pinnate and spreading; pinnæ pendent, six to eight inches long, less than one inch broad, and deep green. Native of Chiapas.

C. microphylla.—This is one of the most elegant pigmy Palms it has ever been our good fortune to see. The stem is slender, dark green, mottled with white dots, which

give it a very peculiar appearance; and the branching flower spikes are produced from below the leaves, when the stem is only some two inches in height. It carries a good crown of leaves, which are pinnate, from six to twelve inches long, and prettily arched; pinnæ ovate-caudate, about four inches long, and an inch and a half wide, and of a very deep green colour. It is a veritable gem. Native of Tropical America.

C. Sartorii.—A most beautiful plant, resembling somewhat *C. elegans*; its leaves, however, are longer and its pinnæ broader; it also carries a more dense crown of leaves, and in addition its flower spikes are bright red. It cannot be too highly recommended for table and room decoration. Native of Mexico.

C. tepechilota.—Stem slender; leaves pinnate; pinnæ rich deep green, pendent. It is a very graceful plant, though somewhat rare, and is valuable for general decorative purposes. Native of Mexico?

C. Warszewiczii.—A magnificent plant, with slender stem and long pinnate leaves; pinnæ broad, sessile at the base, tapering to a point; apical pinnæ broad and bifid; leaves beautifully curved and light green in colour. Native of Guatemala.

C. Wendlandii.—Amongst a whole genus, all of which are eminently ornamental and useful, this species is perhaps the best—if it be possible to say one is better than another. It, however, is certainly the finest for the decoration of the drawing room, where it will stand uninjured for many months. Stem slender; leaves pinnate; pinnæ a foot long, and upwards of two inches broad, sessile at the base, acuminate at the apex, rich shining dark green in colour. Native of Mexico.

CHAMÆROPS.

A small genus of Palms, all of which succeed well in the greenhouse, and are consequently eminently adapted for the sub-tropical garden, while one species at least is perfectly hardy. The various species of *Chamærops* are found scattered through Northern Asia, Northern Africa, North America, and the South of Europe, *C. humilis*, which is the only European Palm, reaching as far north as Nice, in latitude 43°-44°. This genus consists of plants of medium height, although one or two species attain some twenty and thirty feet. The leaves are fan-shaped, the base of the petioles being enclosed amongst layers of coarse fibrous matter. The flower spikes are produced from amongst the leaves, and the flowers are sometimes perfect, and sometimes have the sexes separate; both calyx and corolla are three-parted. The fruit is a berry, and one-seeded. These very ornamental and easily grown plants should be potted in rich strong loam, with a small portion of vegetable mould and sand added. The pots should be drained well, and water should be liberally supplied to them during summer. They are multiplied by taking off the suckers, which sometimes rise up in abundance, and also from seeds.

C. excelsa.—Stem reaching a height of twenty or thirty feet. Leaves fan-shaped; petioles three to six feet long enclosed at the base in a dense mass of rough fibres, and armed at the edges with small teeth-like spines. The fan-shaped leaves are split deeply down into segments, which stand erect, and are of a dark green colour. Native of the East Indies.

C. Fortunei.—This species, although almost hardy, must

not be omitted in this work, because it is a most serviceable kind for the greenhouse, and invaluable for window and hall decoration throughout the winter months. It is often confounded with *C. excelsa*, from which species it is, however, abundantly distinct, in being of stouter habit, in having a more profuse matted network of fibres amongst the bases of the leaves and crown, and in the footstalks being stouter and shorter and the segments of the fan-like leaves much broader. *C. Fortunei* attains to some twelve or more feet in height, and produces a stout stem, which supports a handsome spreading head of fan-like leaves, which are slit into segments about half-way down; the petioles which support them are from one to two feet long, and quite unarmed. The "Chusan Palm," as this species is often called, is a very handsome plant for the sub-tropical garden, even in cold summers, and in situations too cold for it to stand the severity of winter, but there can be little doubt of its thriving well in the open air anywhere south of London. It is a native of Northern China.

C. humilis.—An extremely handsome plant, and very interesting from the fact of its being a native of Europe, thus connecting these denizens of the tropics with our European Flora. In its native habitats it sometimes attains a height of twenty feet, when it presents a splendid appearance, with its straight columnar stem, clothed in many instances with rough fibres, and the persistent bases of the old petioles. At other times it is not so effective; this is when it produces a quantity of suckers from the base. Under these circumstances the stems seldom exceed three or four feet in height, and the plants present more the appearances of bushes than trees, therefore, if a tall stem is required under cultivation, the suckers should

be carefully removed as soon as they make their appearance. The leaves of this species are glaucous on both sides, divided about one third their length into narrow segments, which stand erect; the petioles are also glaucous, about three or four feet in length, and armed at the edges with stout spines. It is a native of Southern Europe.

C. humilis arborescens.—This is a somewhat rare and exceedingly handsome variety of the species. The stem is more slender, and it attains a greater height than that of *C. humilis*; the petioles are from two to three feet in length, armed at the edges with brown spines, stained dark brown at the base, and enclosed in a mass of very fine black fibres. Leaves fan-shaped, and split into narrow erect segments; flower spike produced from amongst the leaves, and enclosed in an oblong boat-shaped spathe, which is dark brown, with a marginal white band. It is said to be a native of Mexico.

C. humilis macrocarpa.—The present plant is a robust-growing form. The stem is stout, and as its name implies, its fruits are larger than the ordinary type. It is of a very hardy constitution, and produces an abundance of its grey or blue green leaves, even in a young state, and is admirably adapted for room decoration or window plants. Native of Northern Africa.

C. hystrix.—An extremely rare species. Stem stout, clothed with woolly fibres and long woody spines; petioles somewhat triangular and glaucous, as are the fan-shaped leaves upon the under side. Native of the Southern United States of America.

C. Martiana.—Stem slender; petioles from eighteen to thirty inches in length, armed at the edges with small spines, and clothed with a fugacious tomentum. The

base of the petioles is enclosed in a network of dark brown persistent fibres; the blade is strikingly fan-shaped and stiff, and has a very distinct appearance, from being split down so regularly all round into narrow segments, which are bright green on the upper side, and grey below. This is a somewhat slow-growing species, but a very beautiful one. It is a fine greenhouse decorator, and is equally useful in the sub-tropical garden. Native of the Himalayas.

C. Palmetto.—This is a slow-growing plant, but valuable on account of its hardiness. The leaves are fan-shaped, divided into long narrow segments, and glaucous green in colour. It is specially adapted for decoration of corridors and halls, as it is a native of the United States of America, and can withstand unharmed a low temperature.

CHRYSOPHYLLUM.

As the name implies, this genus is remarkable for its golden leaves, most of its species being clothed with a yellow tomentum on the under side. It belongs to the order *Sapotaceæ*, and is popularly known as the Star Apple, in reference to its fruit, which is esteemed in its native countries as a delicate adjunct for the dessert. As these plants, however, mostly acquire a considerable height, and in many instances assume the proportions of large trees before yielding much fruit, very few plant-growers have sufficient accommodation to grow them for this purpose, and we have introduced them here solely on account of their highly ornamental foliage. This order to which the genus belongs, is interesting on account of its including the plant *Isonandra Gutta*, to which we are indebted for the gutta percha, an article which has become so exten-

sively used by us as to be almost a necessity. *Chrysophyllums* require potting in sandy loam and peat, in the proportion of two parts of the former to one of the latter; they require an abundance of heat and moisture during the growing season, but less during winter, though they must then by no means be allowed to suffer for want of water, or the result will be the loss of many leaves, and disfigurement of the plants. They may be increased by cuttings of well-ripened small shoots, plunged in strong moist heat, and by seeds when procurable.

C. cainito.—This is the Star Apple of Tropical America, and forms a very large tree in its native habitats. It is, however, in a somewhat small state we wish to look upon it here. The leaves are oblong, from three to four inches in length, tapering to a point at both ends, dark green, and smooth on the upper side, but clothed beneath with silky hairs, which, whilst the leaves are young, are yellow, changing with age to reddish brown. The stems and branches are also clothed in the same way as the under side of the leaves. It forms a very handsome plant, and has been fruited several times in this country. Native of the West Indies and Tropical America.

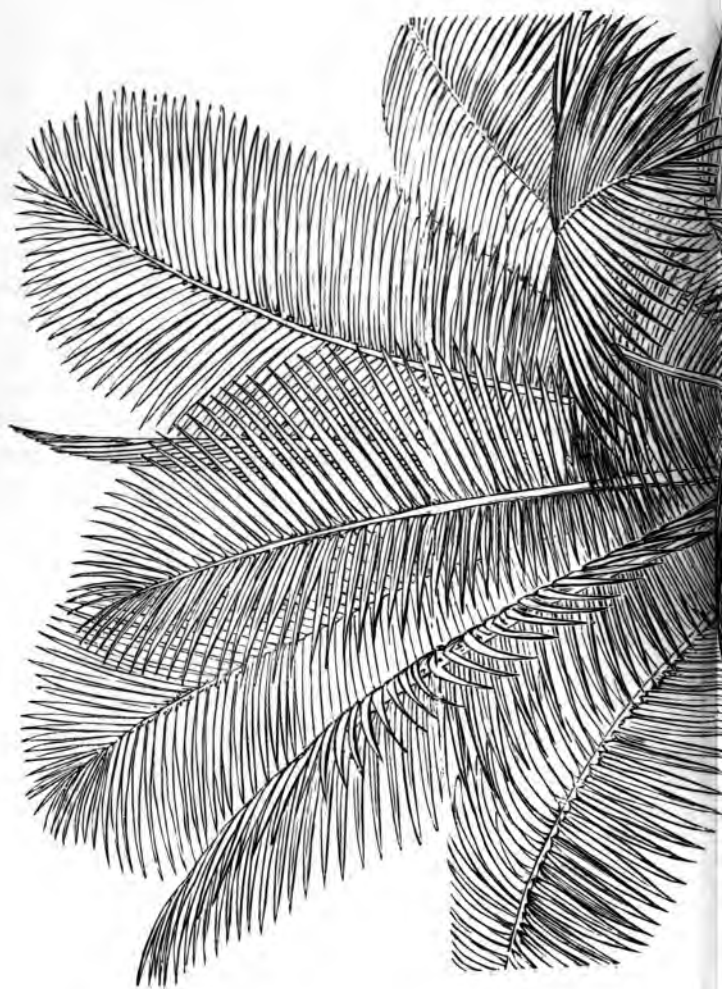
C. macrophyllum.—A magnificent plant, but unfortunately it has ever been a very rare one. It attains a height of fifty feet naturally, but its foliage assumes its full proportions when only a few feet high. The leaves are oblong-lanceolate, about six or eight inches in length, and two or three in breadth, deep green above, densely clothed on the under side when young with rich golden silky hairs, which change with age to chestnut brown. It is well deserving extensive cultivation. Native of Sierra Leone.

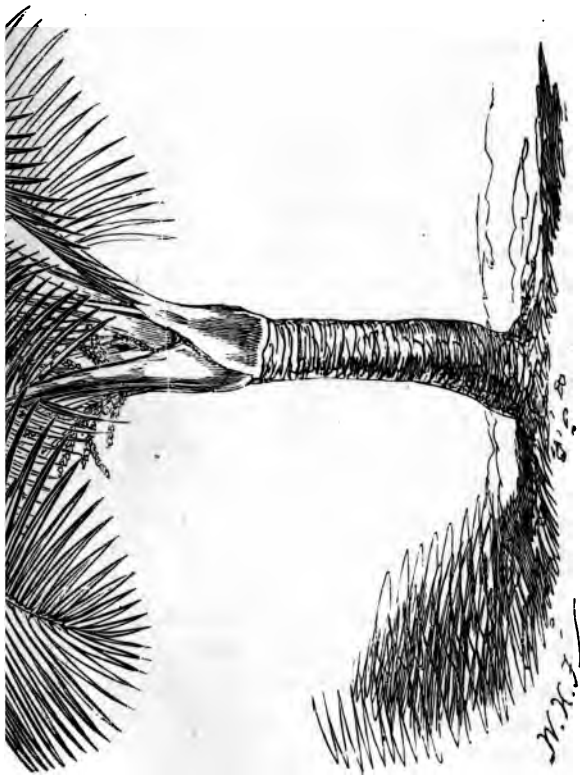
CISSUS.

Plants of easy culture, related to the Grape Vine, requiring a rich soil and strong heat to develop their beauties. Pot in a mixture of sandy peat, turfy loam, and well-decomposed manure in equal parts, and if a very rapid growth is required water occasionally with liquid manure. They may be easily and quickly increased by cuttings.

C. discolor.—This beautiful climber cannot be justly rendered, either by the artist's pencil or by the most minute description. The leaves are cordate-lanceolate, the upper side being of a vivid metallic green, marbled with white and rich purple, and shaded with crimson and peach; the under side is a uniform deep crimson. It is perhaps the most exquisitely coloured variegated plant we have in cultivation, and no stove should lack it. For training up pillars and rafters, or to cover a bare wall, this plant is invaluable, either in a stove or the warm Fern house, and it also makes an elegant specimen when trained upon a balloon-shaped trellis. If the old plants are kept through winter, just sufficient water should be given to keep the shoots from shrivelling, but young plants struck in autumn are far preferable, as they grow more freely and produce finer leaves. Native of Java.

C. Lindenii.—A very fine and distinct plant, producing large cordate leaves, the ground colour of which is bright light green, the spaces between the primary veins being blotched with a metallic white, giving it a striking and distinct appearance. This species, which is of recent introduction, bids fair to become a very ornamental stove climber. Native of Columbia.





COCOS NUCIFERA.

Tropics.

Cocos.

An elegant genus of a noble order, many species of which grow to majestic proportions, and one yields that well-known fruit—the Cocoa Nut of commerce—which may be called one of the chief necessities of life to the inhabitants of the tropics. *Cocos* are all graceful plants, most of them being shade-loving; they form very ornamental objects in the stove, and some species may even be employed with advantage in the sub-tropical garden, if a well-drained and sheltered spot be selected for their reception. They should be grown in a compost consisting of two parts rich loam, one part peat, and one part sand; and during the growing season a liberal supply of water must be administered, gradually diminishing the quantity as winter approaches. The name signifies monkey, from the nuts resembling the face and head of that animal, and with the exception of *C. nucifera*, all are natives of America. Their flowers are unisexual, but both sexes are produced upon the same spike, and both have a three-parted calyx and corolla.

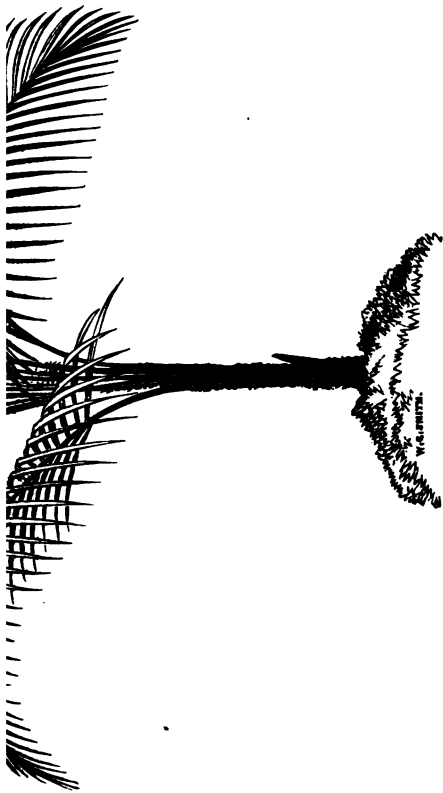
C. butyracea.—This is an elegant-growing species. The leaves are pinnate, erect in a young state, ultimately spreading, from four to six feet long or more; pinnæ from ten to twenty inches in length, and about one in breadth, produced in a peculiar manner, several pinnæ originating from nearly the same spot on the rachis, and very dark rich green on both surfaces. The whole plant is destitute of spines. It forms a most attractive plant in a well-sheltered spot in the sub-tropical garden. Native of New Grenada.

C. elegantissimus.—The present species resembles *C. Weddeliana* in general appearance, but is more robust in its habit of growth. The stem is rather stouter, and the leaves are longer, beautifully arched, and the bases of the petioles are enclosed in a network of brown fibres; the pinnæ are broader, clustered together, and bright shining green in colour. A superb plant to decorate a drawing room or dinner table. Native of Brazil.

C. nucifera.—A cosmopolitan plant, being found in nearly every country within the tropics, where it not only grows wild, but is largely cultivated, and although frequently to be met with inland, it evidently prefers to grow in the vicinity of the sea. This species forms a stem some forty or fifty feet in height, but a dwarf form, which produces a smaller fruit, seldom exceeding six or eight feet in height of stem, is found in the Island of Ceylon; the latter has produced its fruit in this country. The leaves are pinnate, from six to twenty feet in length; pinnæ long, somewhat narrow and pendent, bright glossy green in colour. It is a most difficult plant to cultivate.

C. plumosus.—The species now under consideration attains considerable size, rising upon a stout, straight, column-like stem, some forty or more feet in height. Where it is possible to accommodate it of such size, it forms a highly ornamental tree, producing long arching leaves, and drooping bunches of waxy flowers, which are succeeded by quantities of orange coloured nuts, enclosed in an edible pulp, in size about as large as a chestnut. Most plant growers will be glad to become acquainted with the plant in a young state, as it is a splendid decorative plant in any situation, be it stove, greenhouse, or sub-tropical garden, although during winter it requires stove temperature. The leaves are pinnate, from three





COCOS WEDDELIANA.

South America.

to ten feet in length ; pinnæ clustered together in bunches, from twelve to twenty-four inches in length, and about one inch in breadth, somewhat blunt-pointed, very dark green above, slightly glaucous below ; whole plant smooth, saving the base of the petioles, which are sheathing, and clothed at their edges with rough woody fibres. It flowered in England for the first time in the year 1862. Native of Brazil.

C. Romanzoffianus.—In a young state, this is particularly handsome, and specially adapted for the dinner table and decoration of apartments. The leaves are long, and beautifully arched, resembling a large plume ; the pinnæ are long, pendent, and dark green. It well deserves general cultivation. Native of Brazil.

C. schizophyllus.—This is another beautiful plant. The leaves are pinnate, spreading, and gracefully arched, six or more feet in height, the naked portion of the petiole bordered with red, and armed at the edges with stout red spines ; pinnæ about two feet long, and upwards of an inch in breadth, the apical lobe, some six or eight inches broad, deeply bifid, the whole a rich dark green on the upper surface, paler below ; a most ornamental and highly decorative plant. Native of Brazil.

C. Weddeliana.—This is perhaps the most elegant Palm yet introduced to European gardens ; it has been distributed from some continental gardens under the name of *Leopoldinia pulchra*, but this is a complete misapplication of names, for it is not a synonyme even, the true *Leopoldinia pulchra* being totally distinct, and not yet in cultivation. The stem of this *Cocos* is slender, and clothed with a quantity of black netted fibres. The leaves are from one to four feet in length, or more, and beautifully arched ; the pinnæ, which reach nearly to the base of the petioles,

are long, narrow, and pendent, dark green on the upper side, glaucous underneath, where they are furnished with a few black hairs; no collection in Europe, great or small, should lack this most graceful of all plants. Native of South America.

COCHLIOSTEMA.

This genus belongs to the order *Commelinaceæ*, and although some will grow this plant for the beauty of its flowers, which are exceedingly handsome, we have introduced it in this place upon account of its noble outline and ornamental leaves. It should be grown in a mixture of peat, leaf mould, and loam, in about equal parts, adding sufficient sand to make the whole feel gritty. The pots should be well drained, and a copious supply of water given, both to the roots and from the syringe. We are not aware of its being propagated in any other way at present, except by seeds.

C. Jacobiana.—A most beautiful plant, whether grown on account of its flowers, or its foliage, for the sake of the latter of which we have introduced it here. The leaves are oblong-lanceolate, from one to three feet in length, and from six to eight inches in breadth, sheathing at the base, and of a rich dark green colour, edged with a narrow margin of purple. Its flowers are delicately sweet, and produced in large panicles; in colour two shades of blue, or perhaps violet and blue. Native of Ecuador.

COLEUS.

A genus belonging to the order *Lamiaceæ*. Many of the species are dwarf ornamental plants, suitable for the decoration of stove, greenhouse, or the open borders during summer. The kinds we have introduced here are for the

most part plants of garden origin, the results of cross-breeding, on the one side between robust-growing forms, and on the other with somewhat tender but highly coloured-leaved species and varieties, and the results have been highly satisfactory. *Coleus* are plants extremely easy to cultivate, and they may be used for bedding purposes with advantage; in the decoration of the dwelling-house they are also very serviceable, or indeed in any place protected from cold in winter. Pot in rich loam, to which has been added a little peat and sand. They are increased from cuttings with the greatest ease.

C. Albert Victor.—Leaves reddish brown, margined with yellow. Garden origin.

C. atropurpurea.—This is said to be an excellent variety for bedding-out purposes. Garden origin.

C. Baroness Rothschild.—Leaves rich velvety crimson, with a broad border of golden yellow. Of garden origin.

C. Beauty of St. John's Wood.—A handsome form; leaves scarlet, margined with bright gold; edges frilled. Of garden origin.

C. Beauty of Wedmore.—This compact and elegant form has the ground colour of its leaves bronzy purple, flaked with crimson and carmine, the margin of leaf frilled and bordered with creamy yellow. Of garden origin.

C. Berkleyi.—Leaves large, rich velvety chocolate, shaded with purple, crenate at the edges, where they are green. Of garden origin.

C. Duke of Edinburgh.—The leaves of this variety are rich velvety crimson. A garden variety.

C. Empress.—Stems green, with occasional blotches of purple at the nodes; leaves frilled at the edges, with a bronzy purple centre, and green base, margins reticulated. A garden variety.

C. Her Majesty.—Leaves rich bronzy red, margined with orange yellow; very handsome. A garden variety.

C. Princess Beatrice.—Leaves golden yellow, reticulated with lines of reddish crimson. A garden variety.

C. Princess of Wales.—A superb variety, with velvety red leaves, which are blotched with reddish purple. Of garden origin.

C. Princess Royal.—Leaves bronzy crimson, bordered with yellow; very fine for conservatory decoration. Of garden origin.

C. Princess Teck.—A handsome variety, with large rich velvety crimson leaves. Of garden origin.

C. Queen Victoria.—A superb variety, with large rich maroon leaves, margined with golden yellow. Of garden origin.

C. Ruckerii.—In colour resembling *Perilla nankinensis*, but with a rich velvety appearance totally wanting in that plant. Of garden origin.

C. Scotti.—Leaves frilled at the edges, ground colour bright green, beautifully blotched and veined with purple. Of garden origin.

C. Veitchii.—Leaves large, somewhat cordate, rich deep chocolate, margined with green, edges plain. Native of New Caledonia.

C. Verschaffeltii.—A superb bedding plant, and one that forms a fine object in a conservatory or greenhouse. Leaves of a uniform rich deep crimson, when young margined with green, frilled at the edges; a very fine plant. Native of Java.

COPROSMA.

This genus contains several species, few of which are remarkable for conspicuous leaves or flowers. The variety here introduced is, however, well deserving general culti-

vation, as, independently of its forming a beautiful ornament in the greenhouse, it is very valuable as a window plant, for the decoration of apartments, and for the flower garden during summer. The soil best adapted for it is rich loam, leaf mould, and sand. Propagation is easily effected by cuttings.

C. Baueriana variegata.—For the introduction of this very handsome plant we are indebted to one of our soldiers, who, whilst engaged in the arduous contest with the Maories in New Zealand, found time to gather and send home seeds of various trees and shrubs. This handsome variety originated from seeds of *C. Baueriana* thus obtained, and sown in this country. It is a plant of compact habit, and forms in time a dense and handsome shrub; its leaves are medium-sized, opposite, obovate, the centre of a bright shining green, and the broad margins creamy yellow when young, but changing to white with age. As a greenhouse shrub it is very ornamental, and as a bedding plant it will undoubtedly take high rank, and should certainly be in every collection. It is of good hardy constitution, and will make a charming window plant.

CORYPHA.

This genus contains but few species, but some of them produce the largest fan-leaves of any Palms yet discovered. They are characterized by stout, tall, cylindrical trunks, and gigantic crowns of immense flabellate leaves. The flower spikes are branching, and the flowers are perfect, the sepals and petals being three-cleft, and in each flower are six stamens joined together at the base, whilst the styles are crowned with a plain and simple stigma, and the fruits are one-seeded. The *Coryphas* are plants of extremely slow growth, and should be potted in

a compost made of two parts loam, one part peat, and one part sand. The pots should be well drained, and the plants treated to a liberal supply of water.

C. Gebanga.—The leaves of this species are used by the native population for thatching, and for making baskets and hats, whilst, from its stem, an inferior kind of sago is obtained. The petioles are very stout, and support large fan-shaped glaucous leaves, which are divided fully half their length into narrow segments. It is a noble Palm, but extremely slow-growing. Native of Java.

C. Talieri.—This plant is undoubtedly nearly allied to the Talipot Palm. Stem stout, cylindrical, and about thirty feet in height. The petioles are armed at the edges with small spines. The leaves are fan-shaped, plaited, and dark green; they are used for fans, umbrellas, &c. It is a native of India.

C. umbraculifera.—This is the famous Talipot Palm of Ceylon. In its native habitats it attains some sixty or seventy feet in height, although with us in a young state it is of remarkably slow growth. The petioles are about six feet in length, armed at the edges with small brown teeth-like spines, and support large fan-like leaves, which are plaited, and form a complete circle some twelve feet or more in diameter. These magnificent leaves are used for making fans, umbrellas, and various other things. It is a native of Ceylon and Malabar, showing a preference for the sea coast.

COSSIGNIA.

A genus belonging to the natural order *Sapindaceæ*, and, as far as we know, containing only one species. It is a plant of great beauty, and although an old inhabitant of our gardens, is well deserving general cultivation. The soil best adapted for it is a mixture of loam, peat, and

sand, in the proportion of two parts of the former to one each of the latter; drain well, and give a liberal supply of water. This plant may be increased by cuttings of the ripe wood inserted in sand, and plunged in a strong moist heat; we have not, however, found them root very freely.

C. borbonica.—This neat handsome-growing shrub grows to a height of nine or ten feet, or even more. The leaves are pinnate, the pinnæ being oblong and entire, with a harsh surface, dark green, with the veins bright orange yellow, under side paler and slightly woolly. It requires a strong moist heat to fully develop its beauty. Native of Bourbon and the Mauritius.

CROTON (CODIÆUM).

A genus of plants belonging to the natural order *Euphorbiaceæ*. From one species (*C. Tiglium*) the powerful purgative, Croton Oil, is obtained. Those described here are all handsome plants, and are of very easy culture. When growing they delight in strong moist heat; and in order to produce the rich golden colour in the leaves, to which they are indebted for so much of their beauty, they require to be placed close to the glass, and never to have any shade whatever. As large specimens, either for public exhibition, or for the decoration of the stove, *Crotons* are indispensable, for their habit and colour produce an effect which is not yielded by any other plants. They are easily managed, and can be grown into handsome small specimens, and when so grown, are among the finest things that can be used for the adornment of the dinner table, and also for vases for the sitting room during the winter months. In summer they will stand for a long time either in the windows or hall, and for this purpose they should be extensively grown. *Crotoms*

succeed well in rich loam, with a little peat and sand added; they require an abundance of water, and therefore must be thoroughly drained. According to some authorities the whole of the plants in cultivation are varieties of one species, but we have described them as we know them in gardens, without venturing an opinion upon this extremely difficult subject.

C. angustifolium.—This variety is perhaps more correctly named *angustissimum*. The leaves are very long, narrow, pendulous, and twisted in a spiral manner. When the plant is well grown, it presents one of the most gorgeous sights possible to behold, and which can be compared to nothing but a fountain of gold. For the dinner table small well-grown plants of this kind are real gems, especially when used with some of the dark-leaved *Dracenas*. It is a native of the East Indies.

C. aucubæfolium.—A plant having a compact habit, and forming a very ornamental stove shrub. The leaves are about eight inches long, and some three inches wide, oblong-acuminate in shape; the upper surface is of a rich dark shining green, beautifully mottled with red and yellow, whilst the mid-rib and primary veins are suffused with pink. It is a native of the South Sea Islands.

C. cornutum.—An elegant and compact-growing variety, with narrow oblong-obtuse leaves, having a curious horn-like process developed near the apex; the ground colour is dark green, upon which are scattered a profusion of spots and blotches of rich yellow. It is very distinct and highly ornamental. Native of the South Sea Islands.

C. Hillianum.—This fine plant has oblong, sub-spathulate, acuminate leaves, about seven inches long by some two or three in breadth; the upper surface is of a rich

shining purplish green, the mid-rib and primary veins bright crimson, and the under side a uniform dull purple. It is a compact-growing shrub, and from this, and its beautiful and distinct variegation, it will become a general favourite wherever ornamental foliage plants are esteemed. Native of the South Sea Islands.

C. interruptum.—This plant belongs to the narrow-leaved series, and its leaves are like *C. angustifolium*, pendulous, but many of them are of most fantastic forms; in some instances they assume a spiral form, in others, nothing but the mid-rib exists for two or three inches. The upper surface is of a rich purplish or dark reddish green, slightly tinged with yellow, and with a deep crimson mid-rib; the under surface is dull purplish green. It is of free habit, and will become a highly decorative plant. Native of the South Sea Islands.

C. irregulare.—A somewhat similar plant to the preceding, yet abundantly distinct. The leaves vary from about nine to twelve inches in length; the ground colour is dark green, a rich golden band traversing the centre, in addition to which they are frequently spotted and blotched with yellow. The name is derived from the great diversity of shapes the foliage assumes, scarcely two leaves being alike. Native of the South Sea Islands.

C. longifolium.—This plant is very handsome, having somewhat the appearance of *C. variegatum*, yet abundantly distinct from that kind. The leaves are oblong-lanceolate, from nine to fifteen inches in length, and two inches in breadth, ground colour very deep green; the mid-rib is broadly bordered with rich orange, as are also the primary veins, but in a less degree. The under side is light bright green. There can be little doubt but this plant is either a sport from *C. angustifolium*, or the latter is

a sport from *C. longifolium*, for it frequently happens that *C. angustifolium* produces a few leaves of this plant amongst its own, but we have never seen anything more than leaves. Native of the East Indies.

C. maximum.—This is well deserving the name, for its splendid leaves measure upwards of a foot in length, and three or four inches in width; they are oblong-lanceolate in shape, tapering to a point, and rounded at the base; the colour is a rich bright golden yellow, having a band of dark olive green on each side of the mid-rib. This is without doubt the grandest *Croton* in cultivation. Native of the South Sea Islands.

C. parvifolium.—A very distinct plant, perhaps better known by the name of *C. elegans*, for under this name it has become distributed in our gardens. It forms a handsome shrub. The leaves in a young state are linear and narrow, but as the plant increases in size, they become broad and somewhat ovate; the ground colour is a deep green or purplish green, blotched and spotted with dull crimson. Native of the East Indies.

C. pictum.—This fine plant has oblong-acuminate leaves, which measure from six to nine inches in length, and about three in breadth in the broadest part; when well grown the ground colour is a rich crimson, irregularly blotched and spotted with bright green and black. *C. pictum* is of free growth, and forms a magnificent bush, but it must, like all the other members of this genus, be fully exposed to the influence of sun and light, or its colour will not be so intense. Native of the East Indies.

C. undulatum.—Another superb form of this beautiful genus; the leaves are oblong-acuminate, and undulated or wavy at the edges; the ground colour is very deep green, upon which are scattered numerous blotches of

rich yellow and vivid crimson. This variety is one of the most handsome in cultivation, and cannot fail to be extensively used for general decorative purposes. Native of the South Sea Islands.

C. variegatum.—A plant too well known to need much description, the fact that it is so largely cultivated being a sufficient guarantee of its popularity. The leaves are oblong, and tapering to a point, from six to nine inches long, and two to three broad; the ground colour is a rich bright shining green, the mid-rib and all the primary veins being broadly margined with rich golden yellow. It is a compact-growing and highly ornamental species, either for the decoration of an exhibition, the stove, dinner table, or hall. Native of the East Indies.

C. Veitchii.—The leaves of this variety are of large size and beautifully coloured, measuring frequently upwards of a foot in length, and two inches in width, oblong-acuminate in shape, with wavy edges; the ground colour is rich green, with a broad band of creamy yellow along the centre, which is again suffused with reddish pink. It is a superb variety, which should be grown in every collection of ornamental-leaved plants. Native of the South Sea Islands.

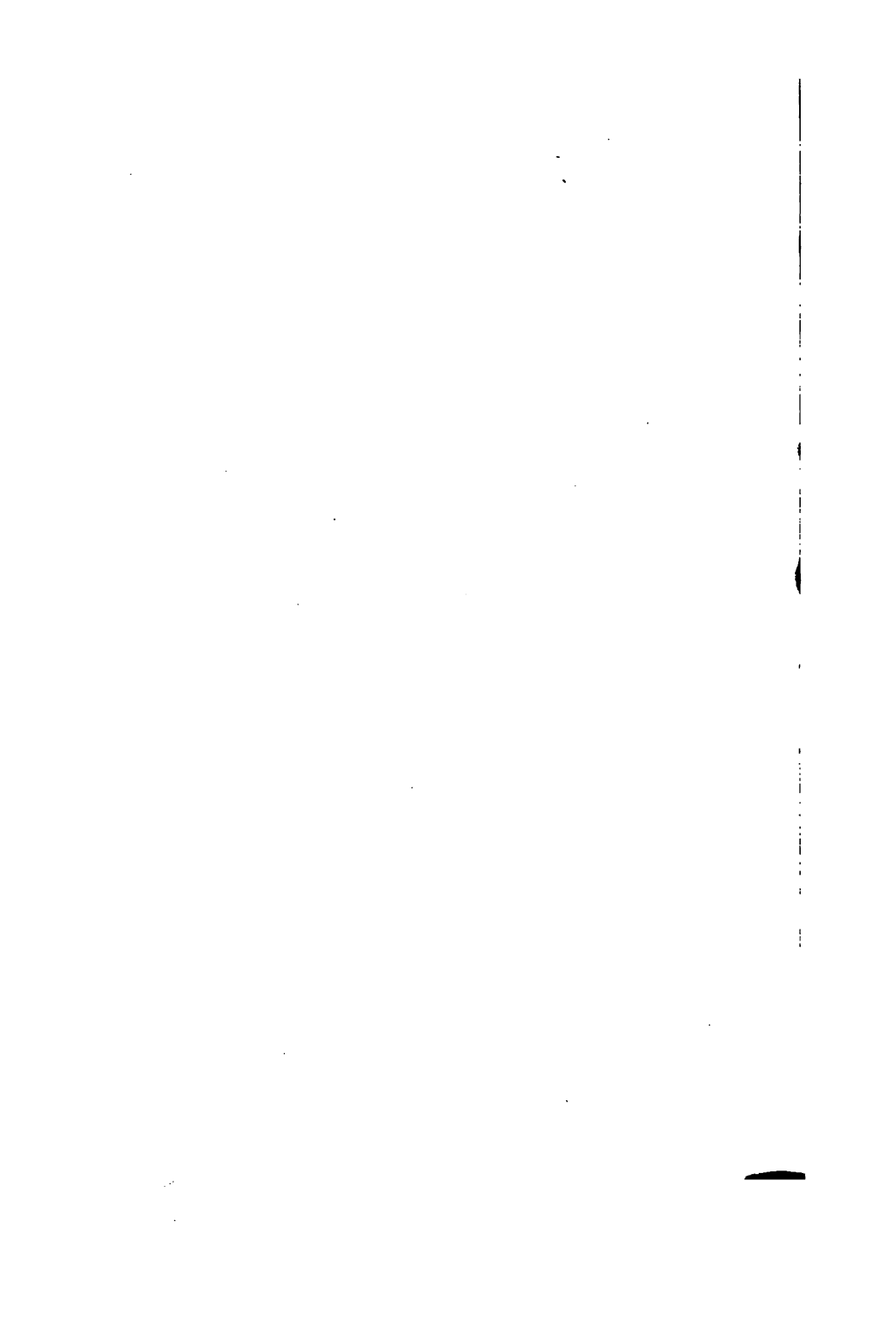
CYANOPHYLLUM.

This genus, which belongs to the order *Melastomaceæ*, is a very popular one, as it includes some of the most beautiful fine-foliage stove plants in cultivation, and which are easily grown into grand plants if the proper treatment be given. The soil best adapted for these plants is good fibrous peat and leaf mould in equal parts, with about one fourth silver sand added. In potting, it is necessary to be particular that the drainage is perfect, because

water must be given freely during summer, both to the roots and foliage, and a thoroughly moist atmosphere must be maintained, to prevent the leaves becoming deformed while they are immature. To increase this plant, insert cuttings and eyes in sand, where a good bottom heat can be maintained, and shade from the sun; it may also be increased readily from seeds when these can be obtained.

C. magnificum.—This is most appropriately named, for it is one of the grandest plants in cultivation. It is of strong robust habit, producing opposite leaves, which are from one to two and a half feet long, and from nine to twelve inches wide, broadly ovate, and tapering to a point; the upper surface is of a beautiful velvety green, with the mid-rib and primary veins ivory white; the under side is reddish purple in colour, with the veins very prominent. This truly magnificent plant is mostly grown with a single stem, which in our opinion displays its beauties to the greatest advantage, but should the amateur wish to have a branching plant, the points of the young growths must be pinched out to induce the lateral eyes to break. It is a species which must always take first rank in any collection of ornamental foliage plants. It has bloomed in this country, bearing a large branching panicle of small insignificant flowers. Native of Tropical America.

C. spectandrum.—A very handsome plant, with large oval leaves, measuring from ten to twenty inches in length, and from four to seven in breadth in its widest part; the upper surface is of a rich dark velvety green, the mid-rib being margined with metallic grey; the under side is pale green, tinged with red, ribs prominent. A very distinct and handsome species, from Tropical America.







CYCAS CIRCINALIS.

East Indies.



CYCAS.

These plants are handsome in appearance, and exceedingly useful either for stove, greenhouse, or conservatory decoration, and also for the embellishment of the sub-tropical garden in summer. The order *Cycadeaceæ* is closely related to the Conifers and Ferns, and judging from their fossil remains, it would seem that they formed a considerable portion of the vegetation of this country in earlier ages. These plants should be grown in strong loam and river sand, and the pots should be well drained to prevent any stagnant water remaining about their roots. They may be increased by seeds, and also by suckers, which they occasionally throw up.

C. circinalis.—This is undoubtedly the finest species of the present genus. It rises upon a stout cylindrical stem as it attains age, although, as in all the other members of this order, the stems increase in size very slowly. The male plant has a somewhat slender stem, and is frequently twice and three times divided, but we have never seen a female plant with a divided stem. The leaves of *C. circinalis* are from six to twelve feet in length, pinnate; pinnæ falcate, and from six to twelve inches in length, dark shining green on the upper side, paler below. A kind of sago is said to be made from the stem of this plant, and it also yields a nutritive kind of meal from the seeds. It is a native of the East Indies.

C. inermis.—Whole plant destitute of spines; stem slender, the pinnate leaves of considerable length, but we are not sufficiently acquainted with this species to say definitely to what length they attain; pinnæ six to eight inches in length, and about half an inch broad, thin in texture, and dark green. Native of New Caledonia.

C. revoluta.—This is an old inhabitant of our gardens, popularly though erroneously called the Sago Palm, since it has nothing to do with the Palms. The stem becomes very stout, and some six or ten feet in height, although such examples are extremely rare and very old. We have seen this plant, when very aged, with stem seven feet in height, and then branched into five distinct stems, giving it a massive and unique appearance. It produces a beautiful crown of pinnate dark green leaves, from two to six feet in length. As a window plant when young, and for the decoration of hall and corridors when large, it is surpassed by none and equalled by few, and it also forms a charming object in the sub-tropical garden. In Saxony its leaves are extensively used at funerals as emblems of immortality. This plant is originally from China and Japan, but having been introduced to Cuba and various other islands, it is now even more plentiful in the home of its adoption than in its own country.

C. Riuminiana.—A very rare, but handsome species. The stem is moderately stout; leaves erect, spreading towards the apex, pinnate; pinnæ tapering to a fine point, and rich bright green in colour. This will doubtless prove a very grand plant under cultivation, but we are not sufficiently acquainted with it to speak from experience. Native of the Philippine Islands.

C. Rumphii.—This is a beautiful plant. The stem is slender, and from its summit the crown of leaves is produced. The leaves are pinnate, four to six feet in length, the naked portion of the petioles armed with a double row of short spines; pinnæ six to ten inches in length, and less than an inch broad, linear-lanceolate, thin in texture, and of a pale green colour. It is a native of the Indian Archipelago.

CYCLANTHES.

A genus of ornamental plants belonging to the *Pandanaceæ*, in which they form a distinct tribe, the *Cyclanthææ*. They have somewhat the appearance of Palms, from which, however, they differ in their flowers. They should be grown in loam, peat, and leaf mould, with a liberal addition of sand, and during the summer months they will enjoy a copious supply of water. These may be easily increased by suckers.

C. bipartitus. — The petioles at base are broad and sheathing, the upper portion nearly terete; the blade of the leaf is from eighteen to twenty-four inches in length, deeply cleft into two broad segments, deep full green above, slightly paler below. It is a singular and very elegant plant. Native of Guiana.

C. cristatus. — This is even a more remarkable and beautiful plant than the preceding. The petioles are very broad and sheathing at base; leaves two to three feet in length, and one in breadth; when young these leaves (which have two primary veins) are entire, but they ultimately become cleft or bifid at the apex; bright shining green in colour. Native of the West Indies.

C. plicatus. — A superb plant for table decoration, or for the ornamentation of the plant stove; stem slender and erect. The leaves are from one to two feet in length, bifid at apex, dark rich green in colour, and pendent. This is the *C. palmata* of Loddiges. Native of Columbia.

CYPERUS.

A large genus belonging to the order *Cyperaceæ*, popularly known as Sedges, and bearing a strong resemblance to Grasses, from which, however, they differ in many

essential points. Many species of this genus are made to contribute towards the wants and comforts of mankind, some being used medicinally, others yielding food, and others again contributing a perfume, which the Asiatic ladies delight to use in dressing their hair. Those named here are valuable for the decoration of apartments, for the dinner table, or for Wardian cases; they may be grown in small pots, and thus are available for standing in ornamental vases, &c. They should be potted in loam and sand, with the addition of a little peat.

C. alternifolius.—An elegant compact plant, bearing upon erect dark green jointless stems a quantity of long narrow leaves, arranged in a somewhat umbellate manner. The plant is very hardy, and is very effective for the decoration of apartments, or the dinner table. Native of New Holland, &c.

C. alternifolius variegatus.—This plant is a very beautiful form of the species, having its stems and leaves either wholly white or elegantly streaked with white, which forms a fine contrast with the rich dark green. It should be in every collection. It is said to have been introduced from Madagascar.

DARLINGTONIA.

A genus belonging to the order *Sarraceniaceæ*, containing but a single species. It is said to inhabit marshy swampy places, near the head waters of the Sacramento River in California. As a genus it is abundantly distinct from *Sarracenia*. The scape is from one to four feet in length, and the flower about two inches in diameter; the curious umbrella-shaped summit to the style, so conspicuous in *Sarracenia*, is entirely wanting. The sepals are of a pale yellow or straw colour; the petals are oblong, light purple, marked with reticulated veins. The soil best

adapted for this plant is a mixture of peat and sphagnum moss in about equal parts, and the pot should be stood in a pan of water. It succeeds admirably in company with the other members of the same order.

D. californica.—This plant somewhat resembles *Sarracenia variolaris* in general appearance. In a young state it is prostrate, but eventually becomes erect, and attains a height of from twelve to eighteen inches. The hollow leaves or pitchers are slender at the base, gradually swelling upwards, the apex being produced and bent over like a hood, with the aperture underneath, and having a large triangular appendage hanging loosely from it. The ground colour is bright green, the upper portion and throat beautifully mottled with white, and reticulated with reddish pink veins. It is a singular and very interesting plant, worthy of general cultivation. Native of California.

DASYLIRION.

This is a genus of fine greenhouse Bromeliads, although presenting a very different appearance to the majority of the order. They are eminently adapted for the decoration of the conservatory, or the sub-tropical garden during the summer months, in winter they may be removed from the greenhouse into the dwelling-house, for the embellishment of the hall, corridors, or grand staircases, where they will produce a splendid effect. *Dasyllirions* should be grown in a mixture composed of two parts loam, one part peat, and one part sand; drain the pots or tubs well, for during the summer season they enjoy copious waterings, but in the dull winter months very little will be necessary. They are increased from seeds, but we believe the majority of the large plants in the gardens of Europe are imported stems of considerable age.

D. acrotrichum.—The leaves of this, as in all the species, are arranged in a rosulate manner, and become pendent with age. The stem is stout; leaves from two to three feet in length, less than an inch in breadth, armed at the edges with long sharp teeth-like spines, terminating at the point with a long brown fibrous tuft; colour dark green. It forms a superb plant. Native of Mexico.

D. acrotrichum brevifolium.—In all respects this resembles the species, saving in the length of the leaves, which in the plant now under consideration seldom exceed two feet in length, and they do not become pendulous. It is a grand plant, and should be more extensively grown. Native of Mexico.

D. acrotrichum gracile.—This variety is exactly the reverse of the preceding, for the leaves are much narrower, oftentimes longer, and are very pendulous. It forms a pleasing contrast with the others, and is particularly adapted for the decoration of apartments; it should be in every collection. Native of Mexico.

D. glaucum.—This is a grand and handsome plant, with stout stem and large compact head of leaves, which are about two feet and a half in length, less than an inch in breadth, fringed at the edges with small teeth, tipped at the apex with a small tuft of brown fibres, and of a deep blue green. Native of Mexico.

D. glaucum latifolium.—A variety of the preceding, somewhat more robust in growth, and with broader leaves; a very fine form. Native of Mexico.

D. plumosum.—This is perhaps the most beautiful kind yet introduced to our gardens; it is like a very large form of *D. acrotrichum*, with broader and longer leaves, which in the young state fall over like a plume; the older leaves are quite pendulous. Native of Mexico.

D. serratifolium.—Stem stout; leaves from two to three feet in length, and broader than any of the above, the edges are armed with long white teeth, which are somewhat distant, and the apex is tufted with a few brown fibres, and both surfaces are glaucous green. Native of Mexico.

DESMONCUS.

Palms with long slender ascending stems, and pinnate prickly leaves, which are produced into long whip-like tails at the ends. They are all natives of South America, and have somewhat the habit of the Indian genus *Calamus*—which, however, is as purely eastern as *Desmoncus* is western. This genus abounds in the forests of the South American Continent, forming in many instances dense, almost impenetrable masses, and oftentimes proves a source of considerable hindrance and annoyance to the traveller; the species are, however, well deserving cultivation, as they are very handsome in a young state, and well adapted for table decoration. When they become too large for this purpose, a pillar or rafter of the stove should be devoted to them, where their peculiar cirrhate leaves will be displayed to advantage, and in such a position will afford a pleasing shade. The flower spike is branched, and produces both male and female flowers on the same branches, the male occupying the upper and the female the lower portion of each. The fruits are small and one-seeded.

D. mexicanus.—This forms an elegant climbing plant, well adapted for a rafter or pillar, while in a young state it is peculiarly suited to table decoration. Stem slender; leaves pinnate, eighteen to twenty-four inches in length; pinnæ six inches long, and about two and a half broad, the upper ones changed into spines, which are straight,

but stand at an acute angle, so that they hold anything that comes near them, or that they are blown against. The pinnæ are dark green, and the sheathing base of the petiole, as well as the rachis, is armed with long black spines. Native of Chiapas.

DICHORISANDRA.

A genus of *Commelinaceæ*, containing many species with very beautiful flowers; these, however, we must omit in this place, for although the species given below have very ornamental flowers, yet the beauty of their leaves has obtained for them a place in this volume. *Dichorisandras* are easily grown if attention be duly paid to their wants, but they soon lose their beauty and fade away if neglected. To grow them well and vigorously, pot in a compost consisting of peat, loam, and leaf mould, in about equal parts, adding a portion of silver sand; a liberal supply of water, with ordinary stove heat, will be necessary during the growing season, and shading from the direct rays of the sun. In fact, at any season of the year dryness must be avoided, and also cold draughts. They may be increased by division, by cuttings, and also by seed.

D. mosaica.—This is a fine species of dwarf habit. The leaves are ovate-oblong in shape, the ground colour of a beautiful metallic dark green, profusely pencilled and veined with zigzag transverse lines of pure white, which produce a peculiar and beautiful effect; the under side is a deep rich purple. The flowers are also very handsome, being a bright azure blue, produced in a terminal spike or truss, during autumn; but as a variegated-leaved plant it is worthy a place in every collection. Native of Peru.

D. undata.—A very distinct species from the preceding, yet resembling it in its habit of growth. The leaves are

broadly ovate, the ground colour dark green; the mid-rib and parallel veins are light green, and, in addition, are numerous transverse bars of white, as well as transverse undulations, which give them a pretty, though peculiar appearance; the under surface is a uniform purple. Native of Peru.

DIEFFENBACHIA.

This is a genus of *Arads* of noble growth, although they do not attain any great height. They are erect-growing plants, requiring only strong heat and a liberal supply of water, both from the syringe and watering-can, during the growing season, to cause them to develop their beauties. The soil should be composed of a mixture of peat and loam in about equal parts, with some silver or river sand added, and a small quantity of well-decomposed manure. *Dieffenbachias* are easily increased by cuttings, which are obtained by cutting down the old plants, and inserting pieces of the stem into properly prepared cutting pots; before doing so, however, it will be necessary to allow the pieces to lie exposed for some time to dry. Care must be taken that no person is allowed to taste the sap, or place a piece of the stem in their mouths, as it is an acrid poison, causing the tongue to swell to an immense size, hence the name of Dumb Cane, which is applied to one of the species of this family, *D. sequina*.

D. Baraquiniana.—A very singular, and, at the same time, very handsome plant, which reaches the height of about five feet when well grown. The footstalks of the leaves are of the clearest ivory white, shining as if superbly polished. The leaves are from six to twelve inches long, and from three to six inches in width, oblong-acuminate in shape, and bright light green in colour, which affords

a charming contrast to the ivory-like leaf stalks; the mid-rib of the leaves is also pure white, and numerous spots of the same are irregularly scattered over the surface. A most desirable plant, introduced to our gardens from Brazil.

D. eburnea.—In this species we have a plant of compact habit and elegant outline. The leaves are oblong-lanceolate, of a delicate light green, profusely dotted and spotted with white; the stems and footstalks of the leaves are stained with pale cinnamon, and ribbed with ivory white. Certainly the neatest and most compact of the whole genus at present in cultivation in our gardens. Native of Tropical America.

D. gigantea.—This is a fine bold-growing plant, combining the characters of *D. Baraquiniana* and *D. grandis* in one plant, producing by this combination a very beautiful effect; the white stems of the former are here, but they are prettily mottled with the light green spots and dots of the latter. Native of Brazil.

D. Pearcei.—A strong-growing kind, and very ornamental in a collection of fine foliage plants. The leaves are large, oblong-lanceolate; the ground colour bright light green, profusely spotted and blotched with creamy white, and having, in addition, a band of the same colour on each side of mid-rib. It is of free growth, and makes a fine specimen plant. Native of Ecuador.

D. Weirii.—Of dwarf habit, and producing its beautifully mottled leaves very freely. It is not only one of the most handsome forms of this genus, but it can be better accommodated by those possessing only a small house. The ground colour of the leaves is bright, yet deep green, spotted and blotched with pale yellow green in profusion. It is a native of Tropical America.

DILLENIA.

A genus of plants giving its name to the order to which it belongs (*Dilleniaceæ*), and having some affinity with the *Magnolias*. The species given here is highly esteemed for its beauty, even in the countries where it is a native, and is there frequently cultivated. It seems to be widely distributed throughout the tropical parts of India, and even extends down into the Malay Islands, forming a tree some twenty or thirty feet high. It should be potted in rich loam, to which may be added a small portion of peat and sand; and it must be treated to plenty of heat and moisture. It is a very desirable plant for those having plenty of space and a large collection, but we would not recommend it to those whose accommodation for plants is limited.

D. speciosa.—This plant makes a rather spreading bush with us. The leaves are from six inches to a foot long, oblong-lanceolate, attenuate at the base, and acuminate at the apex, bright light green in colour, and strongly serrated at the edges. In addition to the handsome leaves, it produces (though rarely in cultivation) large globular yellow and white flowers. Native of the East Indies.

DION.

A singular genus of *Cycadaceæ*, which as far as we are aware contains but one species. It should be potted in good loam and river sand. When in a growing state, the warmth of an ordinary stove is of considerable assistance, but at any other time it stands quite well in the greenhouse or conservatory. We know of no method to increase this plant but by seeds, which are very large, and when pounded into flour are eaten in Mexico. The name is sometimes written *Dioon*.

D. edule.—Respecting this plant in its native habitat, we have very little information, and we have seen no large stems, the largest being but a few feet high, and about three feet in circumference. The pinnate leaves are from three to six feet in length, and six or seven inches in breadth in the broadest part, gradually tapering towards the base, and there clothed with short white woolly hairs. The texture of the leaves is very firm, resembling metal in harshness, while the colour is a glaucous green. It is a noble plant, well deserving a place in a collection of ornamental-leaved plants. Native of Mexico.

DIONÆA.

This genus belongs to the order *Droseracæ*, or Sundews, and contains only one species, which is a plant of humble growth, but exceedingly interesting, being in fact one of the curiosities of nature. *Dionæa* inhabits swampy grounds in North Carolina, and perhaps other States in the American Union, and the best method of imitating its natural soil is to pot in a mixture of peat and live sphagnum moss, afterwards placing the pot in a pan of water, and standing it near the glass at the cool end of the stove.

Dionæa muscipula.—This plant is popularly known as Venus's Fly-trap. The leaves are radical, the lower part broadly winged, the upper portion, or true blade, dilated into a two-lobed irritable limb, furnished at the margin with a row of long, stiff, bristle-like teeth, and having about the centre three similar bristles set trianglewise, which, if touched, cause the lobes to approach each other, and to close up the centre like a trap; by means of the alternate interlacing marginal hairs, when thus closed, the leaf frequently catches flies or other small insects,

and as any movement in the interior only continues the irritation, and causes the edges to close the more firmly together, the leaf does not unfold until the victim is quite dead. This wonderful plant should be grown by every one. Native of the United States.

DIOSCOREA.

These plants are tuberous-rooted, scandent in habit, and herbaceous, and during the summer months they form beautiful ornaments for trellises or pillars in the stove. In the winter months they should be kept in a cool (but not cold) place, either in the pots, or in some perfectly dry sand. The soil most suitable for them is a rich light compost, formed of light turfy loam, peat, leaf mould, sand, and well-decomposed manure in about equal parts. They should have abundance of root room, and be liberally supplied with water during the growing season, gradually diminishing the quantity as the shoots show signs of decay. They may be increased by divisions of the tubers, which may be effected either in autumn or spring, while they are at rest, but never when growing.

D. anætochilus.—A very handsome species, with broadly ovate-acuminate leaves; the ground colour is deep olive green, beautifully marbled with gold, and, in addition, having a central band of the same colour; this description applies to the mature leaves only, as when young they are a plain bright green. Native of the Amazon Valley.

D. discolor.—This is an old inhabitant of our stoves, and is very ornamental. The leaves are large, heart-shaped, and beautifully mottled with two or three shades of green; the under side is rich purplish crimson. Native of Tropical America.

D. discolor vittata.—A most desirable variety of the preceding, possessing all its beauties, and, in addition, having a broad silvery white stripe down the centre of each leaf. Native of South America.

DIPLOTHEMIUM.

The name of this genus of Palms is derived from its double spathe. The flowers are unisexual, but both produced on the same plant; fruits large and one-seeded. The plants comprised in it are all of great beauty, requiring stove heat, and seldom exceed twelve or fifteen feet in height—that is exclusive of the crown of leaves. They should be potted in soil consisting of two parts rich loam, one part peat, and one part sand. These plants are highly ornamental, and if properly prepared by hardening, form splendid objects in the sub-tropical garden. They are increased by seeds.

D. caudescens.—This is a plant of surpassing beauty. We have never seen it upon an erect stem, but it is a grand plant even from its youngest state. The leaves are from two to six feet in length, pinnate; the pinnæ are from eighteen inches to two feet in length, and upwards of an inch in breadth, with a bifid point, the terminal lobe is, however, very broad and bi-lobed. The pinnæ are somewhat clustered together, as if several sprang from nearly the same point; the upper surface is dark shining green, while beneath it rivals the most beautiful of the Silver Ferns for whiteness. Native of Brazil.

D. maritimum.—This very closely resembles *D. caudescens*, but it does not grow quite so large. The leaves are pinnate, and more ovate in outline than the last-named species; pinnæ closer together, from ten to twelve

inches in length, and about an inch in width, obtuse, deep green above, silvery grey below. Native of Brazil.

DRACENA.

A fine genus of Liliacæous plants, some species of which require stove, and others greenhouse treatment. The *Dracenas* are amongst the most useful and beautiful of fine-foliaged plants, partly owing to their noble but graceful habit, and partly owing to the colours which the leaves of many species assume. They are easily grown in a mixture of two parts peat to one of loam, with good drainage, and a fair amount of pot room.

D. australis (*Cordyline*).—A fine plant, growing to a considerable height. The stem is stout; leaves from two to three feet in length, and two to four in breadth, oblong-lanceolate and bright green. It forms a fine ornament to the greenhouse and conservatory, and stands well in the open air during summer. Native of New Zealand, &c.

D. cannaefolia.—This is an elegant and highly ornamental species, growing to a considerable height. The leaves are supported on long petioles, and are somewhat oblong in shape, with an obtuse apex—or what is most frequent, the apex is split—from one to two feet long, and three to five inches wide, slightly recurved, and dark green in colour. It is a most desirable plant, being equally suitable for the decoration of the stove, conservatory, ball room, or sub-tropical garden. Native of Tropical New Holland.

D. Cooperii.—This is a very handsome and graceful plant. It belongs to the same group as *D. terminalis*, but its leaves are broader, and more highly coloured, and in addition they are recurved, which gives the plant a very elegant appearance. As a decorative plant for any situ-

ation it is unsurpassed, being equally at home in the stove, in the hall, on the dinner table, or in the sub-tropical garden in the open air, and no collection should be deficient of this prince of its class. Native of New Caledonia.

D. ferrea.—A somewhat tall-growing plant, with leaves from nine to twelve inches long, about four inches wide, and ovate-oblong in shape; both surfaces are of a deep purplish red, which renders it a striking object in any situation. It is a useful and highly ornamental plant in the sub-tropical garden. Native of China.

D. gracilis.—An elegant little species, sometimes found in collections under the name of *D. marginata*. The stem is slender, and the leaves, which stand horizontal, are upwards of a foot long, and about an inch in breadth, tapering to a point, bright dark green in colour, the margins bordered with a band of purplish bronze; being of close compact habit, it can be easily accommodated, and is well deserving general cultivation. Native of Penang.

D. indivisa (*Cordyline*).—This is the *Cordyline indivisa vera* of our gardens, and in some collections is known under the name of *D. aureo-lineata*. It is a magnificent plant, and forms a beautiful object in the conservatory, but is too tender to succeed well as a sub-tropical plant. The leaves are from one to five feet in length, and from two to four inches in width, lanceolate in shape, dark shining green, the mid-rib and veins being of a rich deep orange. In a young state this makes a beautiful plant for table decoration. Native of New Zealand.

D. indivisa.—A most graceful plant, forming an elegant plant for table or room decoration, for the greenhouse, conservatory, or open air during summer. The leaves are from two to four feet in length, and one to two inches in

breadth, tapering to a point, pendent and dark green. It is sometimes called *D. superbiens*, and must not be confounded with the preceding *Cordyline indivisa*. Native of New Zealand.

D. indivisa atropurpurea.—This is a superb form of the preceding, having the base of the leaf and the mid-rib on the under side of a dark purple, giving a distinct and handsome appearance. Native of New Zealand.

D. indivisa lineata.—The leaves of this variety are very much broader than the species, measuring sometimes four inches across, and the sheathing base is stained with reddish pink. It is a superb plant for general decorative purposes, one which no collection of ornamental-leaved plants should lack. Native of New Zealand.

D. indivisa Veitchii.—In this form the habit and size of the leaf is the same as in the species, but in addition it has the sheathing base and back of mid-rib of a beautiful deep red. It is a most desirable plant for general purposes of decoration, either in-doors or in the open air during summer. Native of New Zealand.

D. limbata.—A distinct plant, producing erect leaves, which are slightly twisted; the centre is a deep purplish bronze colour, margined with a narrow band of red. It affords a beautiful contrast when grouped with other *Dracenas*, or in a mixed collection, and well deserves general attention. Native of New Caledonia.

D. Macleayi.—This is a species of great beauty, of dwarf and robust habit. When well grown the leaves are from eighteen to twenty inches long, and some four inches broad, dark bronzy brown, with a metallic gloss pervading the whole surface. Its many good qualities render this plant very desirable. Native of the South Sea Islands.

D. marginata.—This is a beautiful plant, requiring the

protection of a warm greenhouse or the cool end of a stove. The stem is stout; leaves sheathing at base, from one to three feet in length, and two to four inches in width, tapering to a point, bright green, except at the edges, where they are margined with reddish brown. Native of Madagascar.

D. Moorei.—This is a very ornamental species, which cannot be too highly recommended. It is of bold robust habit, producing large leaves, which are slightly recurved, and deep bronzy purple in colour; the petioles are stout, brilliant red, tinged with a shade of purple; it is a most desirable plant. This is a variety of *D. terminalis*, and belongs to the modern genus *Calodracon*. It is a native of the South Sea Islands.

D. nigrescens.—A very distinct and effective plant, in habit resembling *D. terminalis*, but its leaves are somewhat narrower, and deep purplish black in colour, with occasionally a few streaks of red, forming a striking contrast to almost every other plant. Native of New Caledonia.

D. nigro-rubra.—A plant of robust habit and erect growth, producing leaves twenty inches or more long. The young foliage is bright crimson, which changes with age, leaving them with a rosy crimson centre, and very dark brown margins. Abundantly distinct and very ornamental. Native of the South Sea Islands.

D. phrynoides.—This is a dwarf-growing species, with broadly ovate, acuminate, leathery leaves, which are from six to eight inches long, exclusive of the leaf stalk; the upper surface of the leaf is very dark green, profusely spotted with pale yellow, the under surface is paler. It is a pretty small-growing plant, known also by the name of *Phrynium maculatum*. To grow it satisfactorily, it must

have abundance of heat and moisture. Native of Fernando Po.

D. punctata.—This plant somewhat resembles *D. gracilis* in style. The leaves are from twelve to twenty inches long, and about one inch wide, tapering to a point, and sheathing at the base; dark olive green in colour, streaked and spotted on the upper side with yellowish green. Native of Penang.

D. regina.—This is certainly one of the finest and most distinct of the recent additions to this genus. It is of excellent habit, producing large erect oblong leaves, the ground colour bright green, beautifully variegated with creamy white. When quite young the margin only is white, but as it acquires age fully one half the leaf becomes white. It is a plant which should be in every collection. Native of the South Sea Islands.

D. robusta.—A noble-growing plant, although destitute of the brilliant coloured leaves so common in this genus. In the present plant, the leaves are from two to three feet long, and some five or six inches broad, the colour being bright green, margined with a narrow line of red. The bold robust habit and broad leaves lend a charm to this plant, which is the more appreciable when they are contrasted with some of the high coloured kinds. It is very ornamental in the conservatory, forms a splendid window plant, and is equally beautiful in the open air during summer. Native of New Caledonia.

D. Rumphii.—In habit of growth this plant is somewhat *Yucca*-like. Its leaves are from one to two feet long, and four or five inches broad, recurved, and sheathing at the base, fleshy, and dark green in colour; a beautiful ornamental species, forms a splendid object in a vase. Native of the Indian Islands.

D. terminalis.—An old inhabitant of our stoves. The leaves are from ten to twenty inches long, oblong-lanceolate in shape; the ground colour is bronzy green, with broad oblique streaks of crimson running from the mid-rib to the margin, when fully exposed to the light the green is entirely replaced by the brighter colour. This plant has hitherto mostly been kept in the stove, but it makes a very fine addition to the sub-tropical garden, and for dinner-table decoration, or, indeed, as a window plant, it is invaluable. Native of the East Indies, China, &c.

D. terminalis stricta.—This is a lovely plant, being equally at home in the stove, the conservatory, or the sub-tropical garden. Its leaves are large, and broadly lanceolate, tapering to a blunt point; the ground colour is a deep purplish bronze, which is intermixed over fully one half the leaf with a rich bright crimson, this being dashed and blotched with light green. Such a happy combination of colour renders this one of the most handsome kinds in the genus. It is also cultivated under the name of *D. ferrea variegata*. Native of the East Indies.

D. umbraculifera.—A very ornamental plant, which, from its peculiar habit of growth, is distinct from all other members of this family. The leaves are from two to three feet long, and about an inch or little more in width, dark shining green in colour, very closely set, and stand in an horizontal manner, with the ends slightly recurved, giving it the appearance of a table top or umbrella, as its name implies; it is a very desirable plant, useful for decorating in any situation. Native of the Mauritius.

DROSERA.

A genus of beautiful plants of small proportions, and typical of the order *Droseraceæ*. They are popularly

known as Sundews, and are all more or less ornamented with red hairs, which discharge a viscid juice, and which enables them to catch flies and other small insects. As these plants are exceedingly interesting, and can be so easily accommodated, they will be found worthy a place in every amateur's collection, even if the space allotted for plant growing only comprises a Wardian case. Their culture is very easy, living sphagnum moss and a little peat being all the soil necessary. A quantity of potsherds should be used, the pot stood in a pan of water, and the plant placed near the glass and well exposed to the light, after which it will require copious waterings. *Droseras* are increased by seeds, which should be sown as soon after gathering as possible, for they do not retain their vitality for any length of time. There are yet many superb species of this exquisite genus to introduce; the British species are exceedingly beautiful.

D. binata.—This species is frequently to be found in collections under the name of *D. dichotoma*. The leaves are all radical, produced on long footstalks, and deeply parted into two linear lobes, which are densely clothed with reddish crimson hairs. Native of Tasmania.

D. capensis.—The leaves of this are radical, linear-oblong, obtuse at the apex, but tapering towards the base, and clothed with a profusion of red hairs. Native of the Cape of Good Hope.

D. spathulata.—A somewhat rare species, to some extent resembling a miniature of the preceding. It forms a compact and handsome tuft. Native of Tasmania.

D. lunata.—This is an exceedingly rare plant in cultivation, which is much to be regretted. The plant grows from six to nine inches high; the radical leaves are nearly round, but those produced upon the stem are

petiolate, crescent-shaped, and clothed with slender red hairs. It is said to be found in Nepal; we have received it from the Neilgherries.

DETANDRA.

Another genus of *Proteaceæ* which have shared the same fate as the *Banksias*, but which we hope soon to see again in collections. The remarks as to culture given for the genus *Banksia* (p. 114) will be found equally applicable to these. They are all natives of various parts of New Holland, and one of the most essential things (in addition to thorough drainage) for their healthy existence is a free circulation of air. In summer they stand in the open air unharmed, and are very ornamental and pleasing objects.

D. nivea.—This very handsome species attains a height of two or three feet, and forms a beautiful dense bush. The leaves are some four or five inches long, linear, pinnatifid, with acute three-angled lobes; upper side deep green, snowy white beneath. It is a most desirable species. Native of South Australia.

D. plumosa.—Another very beautiful plant; when small it is one of the most elegant table plants it is possible to conceive. The leaves are dense, from five to ten inches long, and about half an inch broad, linear-elongate in shape, and pinnatifid, dark green on the upper side, pure white below. Native of South Australia.

D. seneciifolia.—The present is a very elegant plant, growing some two or three feet high. The leaves are from three to four inches or more long, linear and pinnatifid, the lobes being divided almost to the mid-rib; lobes very small, triangular; deep green above, greyish

white below. It is a most desirable and very ornamental species. Native of Australia.

DYCKIA.

A small genus of *Bromeliaceae*, remarkable for their elegant foliage and ornamental habit of growth. They are quite destitute of stem, or more rarely produce a very short one, and have rigid leaves, which are spiny at the edges and apex. The *Dyckias* succeed admirably in the company of *Agaves*, and such-like plants, and form a pleasing contrast in a Wardian case of succulent plants. The soil best adapted for them is a mixture of two parts loam, and one part vegetable mould, with some sand added. The pots must be well drained, and water must be liberally applied during summer, but in the dull winter months much less will be necessary, though these plants do not prefer such a total deprivation as the *Agaves*. They may be increased by suckers, and also by seeds when they are to be obtained.

D. argentea.—A most elegant plant, with long rigid recurved leaves, arranged in a rosulate manner, and lying so close to each other, and so much recurved, that they almost suggest the name of tabuliforme. Leaves some two feet in length, and rather less than an inch in breadth, tapering to a point, toothed at the edges like the elongated jaws of the sword-fish, the whole surface above and below densely covered with white scales, which give it the appearance of being covered with hoar frost. It is an exceedingly rare and beautiful plant. Native of Tropical America.

D. rariflora.—This species, though it cannot boast the attractive qualities of the preceding plant, is nevertheless a very neat and interesting one, specially adapted for a

window plant, or for the decoration of a Wardian case devoted to succulent plants. It has rigid recurved greyish green leaves, and scarlet flowers, somewhat resembling those of certain *Aloes*. Native of Brazil.

ELAEIS.

This genus contains but two species, which, independent of their ornamental qualities, are exceedingly interesting to the cultivator, upon account of their yielding so much of the Palm Oil of commerce. As a genus *Elaeis* is distinguished by its large somewhat obovate heads of fruit; the flowers are unisexual, and borne upon distinct plants, although more rarely both occur upon the same individual. The leaves are pinnate and spreading, and from its hardy constitution it can be used for the decoration of the greenhouse or apartments in summer, as well as in the stove. These plants sometimes produce a few suckers, but the principle method of increasing them is by seeds.

E. guineensis.—The plant from whence is obtained the African Palm Oil, and some idea may be formed of its importance, when we state that oil to the value of about a million and a half of money is annually imported to this country. The stem rises to a height of twenty or thirty feet, and supports a handsome crown of leaves, which are pinnate, some fifteen feet in length, and rich dark green in colour. It is with this plant in its young state, however, that most cultivators will have to deal, and then it is admirably adapted for the decoration of the dinner table or drawing room, and also forms a very attractive object in the plant stove. This species flowered in the year 1858, for the first time in England. It is abundant on the West Coast of Africa.

E. melanococca.—A plant of somewhat decumbent habit,

and like the preceding, producing large quantities of oil. In general appearance it somewhat resembles the preceding, but it never assumes the proportions of the African species. It is a native of Tropical America.

ENCEPHALARTOS.

A genus of Cycadeaceous plants which in most instances form very stout stems, and which must be many years in arriving at maturity. They are magnificent plants for the greenhouse or conservatory, and also make splendid ornaments when used in the sub-tropical garden in the summer months, either plunged in the lawn as single specimens, or grouped with other plants. *Encephalartos caffer* is the species from which the Caffer tribes obtain some of their food, and which has led to this plant being called Caffer bread; the part used is the pith of the trunk near the top, which is scooped out, and then buried under ground, when after having lain for some six or eight weeks, it is taken up, made into cakes, partially baked, and eaten with great relish. The large seeds are also roasted and eaten, and these probably would be a greater delicacy to a European than the bread. The pots for these plants should be well drained, as they mostly inhabit dry stony places, and they should be potted in strong loam and river sand. Very little water will be necessary when not growing, but at the time they are making new growth a liberal supply is necessary, both from the watering-can and the syringe. These plants will frequently stand several years without making fresh growth, but this should not be a source of uneasiness to the amateur, as it appears quite natural for them to stand thus, and nothing, as far as our experience goes, can artificially force them into growth. Increased by seeds.

E. Altensteinii.—This is a very handsome plant, with a stout stem; leaves pinnate, from two to six feet in length; petioles much swollen at the base, which causes the leaves to stand somewhat wide apart; pinnæ coriaceous, oblong-acuminate, about six inches long, and one inch broad, dark green above, paler below, armed at the apex and edges with long sharp spines. Native of the Cape of Good Hope.

E. brachyphyllus.—Stem stout; petioles thickly clothed with a short tomentum; leaves pinnate, spreading, the pinnæ continued down the rachis to within six inches of the base. The erect pinnæ are some five inches long, and barely a quarter of an inch wide, stiff, and armed at the point with a sharp spine. The whole plant is of a bluish green tinge, paler on the under side. This is a very handsome species, with somewhat the habit of *Cycas revoluta*. Native of South Africa.

E. caffer.—This is the species from which the Caffer tribes of South Africa make the Caffer bread. The stems are from eight to eighteen feet in height, and three or four in circumference, clothed at the crown with numerous abortive scales. From the summit of this massive trunk arise the leaves, which are pinnate, three to four feet in length, very stiff and harsh in texture, spreading, and recurved at the apex; pinnæ numerous, linear-lanceolate, from four to six inches in length, and one in breadth, somewhat erect, ending in a short, sharp, brown spine, and dark bright green in colour. In young plants the pinnæ are sometimes toothed, but this is a character which disappears with age. This species is sometimes found in collections under the name of *E. longifolius*. Native of South Africa.

E. Ghellinckii.—As a small plant, this is perhaps one

of the most handsome of the genus, but what character it may assume with age, or to what height it attains, we are unable to say. In our gardens it has a somewhat stout base, which is furnished with woolly scales; the leaves are pinnate, erect, spreading out from about the middle, from two to four feet in height; pinnæ very narrow, linear, and, as well as the petioles, densely clothed with a short grey tomentum, the whole plant being destitute of spines. It is a most desirable species. Native of South Africa.

E. horridus. — This is a remarkable and formidable-looking plant. The stem is stout and short; leaves pinnate, from two to six feet in length, erect, and turned back abruptly at the top; pinnæ about four inches in length, armed at the point with a long and very sharp brownish white spine. In some forms of this plant the inferior margin of the pinnæ is also armed with two similar spines, and then it is sometimes called *E. horridus trispinosus*. Whole plant blue green, and very harsh in texture. Native of South Africa.

E. lanuginosus. — A noble-growing plant, but we have hitherto been unable to find the reason for its name, which may, however, apply to the cone, which we have never seen. Stem six or eight feet in height, and three feet in circumference; leaves pinnate, from three to six feet long, erect, recurved towards the apex; pinnæ cordate-lanceolate, blunt-pointed, very thick, about six inches in length by one and a half in breadth, frequently with a tooth upon the inferior margin. Whole plant destitute of spines, and of a dark heavy green. Native of South Africa.

E. Lehmanni. — Stem stout, two to three feet in circumference; whole plant very glaucous. Leaves pinnate, six

feet in length; pinnæ somewhat erect, five to seven inches in length and about a fourth of an inch in width, tapering to a point, and there armed with a short brown spine.

E. villosa.—This is a very handsome plant. The petioles and scales of the stem are clothed with a dense tomentum; leaves pinnate, from two to four feet in length, tapering at the base and apex; pinnæ from six to eight inches in length, and one in breadth, tapering to a point, ending in a sharp spine, the edges also distinctly armed; both surfaces bright green. Native of Natal.

ERASTHEMUM.

The genus to which we here direct attention is remarkable for having many species with beautiful flowers; the plant here introduced is, however, one of the most beautiful of the dwarf-growing variegated-leaved plants which have been introduced to our gardens. It should be grown in peat, leaf mould, and sand in about equal parts, and may be increased by seeds, cuttings, or division.

E. igneum.—A pretty dwarf-growing species, with very dark green oblong leaves, attenuated at the base, the mid-rib and primary veins being bright copper coloured, margined with fiery red, the under side is dull red. It is a very desirable plant. Native of South America.

FERDINANDA.

F. eminens.—This is one of the grandest sub-tropical plants, attaining a height of from six to nine feet or even more. The leaves are opposite, and very large, dark green on the upper side, paler below. It is a most attractive plant in the open air during the summer months; during winter, greenhouse temperature is all that is necessary.

The old plants should not be used a second season, as cuttings struck in March form by far the most symmetrical plants.

FICUS.

In this family we have some of the most ornamental plants which it is possible to find for the decoration of the conservatory or stove, whilst the coriaceous texture of their leaves and their robust constitution eminently adapt them for window culture, and for planting in the sub-tropical garden during the summer months. Independent of this, however, they possess great interest on account of the various species being of vast importance in an economic point of view. For instance, *F. elastica* supplies an immense quantity of the india rubber of commerce, as do indeed many other species. Again, we have from *F. carica* the delicious figs of our gardens, and the same fruit in a dried state is imported in large quantities from the eastern parts of Europe, as an addition to the dessert. The famous Banyan Tree of India, which spreads over such immense spaces by its branches sending down adventitious roots, and thus forming a miniature forest, is also a Fig (*F. indica*). Another species, *F. religiosa*, one of the most ornamental kinds, is highly esteemed by the Hindoos, under the name of Pippul Tree. The juice of all the species is milky, and in nearly all cases hot and biting to the taste. These plants are easily grown, and many of them will withstand a great deal of rough treatment with impunity. They should be potted in somewhat heavy soil—that is a mixture of loam, peat, and sand, in the proportion of three parts of the former to one of the last named. *Ficus* may be easily increased from cuttings, and also from seed.

F. barbata.—This is a superb plant for covering walls

in a stove and such-like places, as it adheres close to them, and is not liable to the attacks of insects. The leaves are about three inches in length, cordate, with the point lengthened out, dark green, clothed at the edges with long brown hairs. Native of Singapore, &c.

F. Brassii.—This fine species has large somewhat fiddle-shaped leaves, which are rich deep green in colour, whilst the stems and petioles are clothed with a ferrugineous tomentum. It is a free-growing and very useful plant, being equally at home in the stove, greenhouse, or even in the sub-tropical garden during summer. Native of Sierra Loone.

F. dealbata.—A plant of recent introduction, and one that promises to be an object of great beauty; the leaves are from six to twelve inches in length, acuminate at the apex, bright dark green above, and snowy white on the under side. It should be in every collection. Native of the Upper Amazon.

F. elasticus.—This is a well-known plant, and is grown in many a cottage window, under the name of India-rubber Plant; it is admirably adapted for the decoration of apartments or halls, and also as a sub-tropical plant during summer. The leaves are from six to eighteen inches in length, and from three to six inches in width; the upper side is dark bright shining green, yellowish green below. Native of the East Indies.

F. Porteana.—The plant now under consideration differs materially from the previously named species. Here the leaves are not thick and leathery, but thin in texture, from six to twenty inches long, somewhat oblong in shape, with an acuminate apex, the edges serrate, and the upper surface dark shining green, paler below. It is an extremely ornamental plant, suitable for the conservatory during

summer, but in winter requiring stove temperature. Native of the Philippine Islands.

P. religiosa (The "Pippul Tree" of the Hindoos).—Is a very ornamental plant, forming a compact and handsome bush; its leaves, which are light bright green, are nearly cordate in shape, with the apex lengthened out to a long tail-like process. It forms a beautiful plant for the decoration of apartments, and should be more extensively grown than has hitherto been the case. Native of the East Indies.

P. stipulata.—This little species is frequently to be seen in collections of plants under the name of *P. repens*. It is a climber, attaching itself to walls or stems of trees, and forms a beautiful object, its small dark green leaves lying so close to the wall; and as it is not subject to the attacks of insects, it is a valuable climbing plant to recommend the amateur. Native of the East Indies.

P. Suringarii.—An excellent erect-growing species, very ornamental in stove or greenhouse, or even in the open air during summer; the leaves are of considerable size, heart-shaped, with serrate edges, the upper surface rich dark green, the main ribs of which and the nodes from which the petioles spring are deep red. Native of Amboyna.

FITTONIA.

An Acanthaceous genus possessing several species of great beauty. They are trailing plants of easy growth, and have very brilliantly marked leaves. As ornaments for a Wardian case they are unequalled, and when grown as pyramids they form beautiful objects in the stove. For planting upon the surface of the pots or tubs in which Palms or other large specimens are growing they are very useful, and also for forming narrow borders as edges

to the walks in the stove. To grow them well, plant in a mixture of peat and loam, with a liberal addition of silver sand; let them be liberally supplied with water, and always well shaded, as this intensifies the rich colours of the veins. *Fittonias* are readily increased by cuttings, and by divisions of the plants; and on account of their bright colours and neat manner of growth, no collection should be without some of the species. Some of the under-named plants are also found in collections under the name of *Gymnostachyum* and *Gymnostachys*.

F. argyroneura.—A very neat and compact-growing plant. The leaves are somewhat ovate, about four inches long and nearly three wide; when well grown, the ground colour is vivid green, with a shining surface over which is an elegant net-work of silvery white. It is a beautiful plant, and deserves general cultivation. Native of Peru.

F. gigantea.—In this species we have a plant of more robust constitution than *F. Verschaffeltii* and *Pearcei*, and also producing larger leaves, which are deep rich green, and beautifully netted and veined with clear rose, but not so brightly coloured as in the species just alluded to. It is a native of Tropical America.

F. Pearcei.—This plant resembles the first species in its general habit, but is even more compact than it. The leaves are from three to four inches long, and two to three broad, and somewhat obtuse at the point. The upper surface is of a light but very bright green colour, the broad mid-rib and veins being light bright carmine, which gives it a most beautiful appearance; the under side is somewhat glaucous. Like its congeners it is a shade-loving plant, and deserves a place in every collection. Native of Tropical America.

F. Verschaffeltii.—Another very beautiful kind, but

closely resembling *F. Pearcei*. The leaves are similar in shape but larger, and the ground colour is dark green, the mid-rib and veins being deep red; under side pale green. A very elegant trailing plant. Native of Brazil.

GEONOMA.

This very elegant family of Palms merit the attention of all plant growers, their dwarf habit and beautiful crown of leaves specially recommending them to those with small houses. In their native habitats they are not exposed to the direct rays of the sun, but are found in great quantities luxuriating in the shade of larger Palms, and indeed under many other denizens of the forest, but in no instance have they been found in the open removed from other trees; hence it would seem a large amount of shade is necessary to their existence, and this should be carefully noted by the cultivator. *Geonomas* are found in abundance in most of the forests of the Peruvian and Equatorial Andes, up to an elevation of about 4,000 feet, but those species which are natives of New Grenada and Mexico grow at even greater elevations. This genus is nearly related to *Chamædorea*, which it somewhat resembles. The flower spikes are simple or branched; the flowers are unisexual, produced upon the same plant, but on distinct spikes; the fruits are one-seeded. *Geonomas* should be potted in spongy peat and loam, in the proportion of two parts of the former to one of the latter; they require an abundant supply of water—indeed, many of them grow best when plunged in a tank, and should any of them fall into bad health, if stood in a tank of water, with a little extra heat, they will speedily recover. They are increased by seeds and suckers only. For stove decoration, or the

decoration of the dinner table, these plants are superb, but we cannot recommend them for the embellishment of apartments, for wherever we have seen them tried, they have always looked miserable; therefore our advice is, for room decoration use *Chamædoreas* extensively, but avoid *Geonomas*.

G. binervia.—An elegant plant, with slender stem, and pinnate pendent leaves, from two to four feet in length; pinnæ decurrent at base, tapering to a tail-like point, from six to twelve inches long, and dark green. The petioles are enveloped in a network of rough brown fibres, and as the old bases of the leaves are very persistent, it gives a somewhat rough appearance to the stem, but not sufficient to make it unsightly. Native of Nicaragua.

G. congesta.—Stem the thickness of an ordinary walking-cane; petioles sheathing at base; leaves from one to two feet in length, and bright light green in colour, they are narrowest at the base, widening upwards, until at the apex they are from six to eight inches across; sometimes the leaf is entire, with a bifid apex, whilst at other times it is again divided into broad pinnæ or segments. It is a very handsome species. Native of Costa Rica.

G. elegans.—This species has a slender reed-like stem, the sheathing base of the petioles quite surrounding it; leaves about twelve inches long, the apical lobe is broad and bifid, the remaining portion of the leaf being divided into two pairs of broad decurrent pinnæ; leaves when young bright pink, changing with age to dark shining green. This real gem is a native of Brazil.

G. ferruginea.—Stem slender. The leaf is divided into two pairs of broad sessile pinnæ, and a bifid apical one, the entire length being from one to two feet, and breadth some eight inches; the leaves are bright shining green

in colour, supported upon slender petioles, and beautifully arched. Native of Brazil.

G. macrostachys.—This is a beautiful dwarf-growing species, with a slender stem; petioles light brown, sheathing at the base, and clothed with a scaly tomentum; blade of the leaf some twelve or fifteen inches in length, usually divided into three pairs of broad segments, ending in tail-like points. When young these are deep red, changing with age to dark green. It produces suckers freely, and makes a beautiful group; should be in every collection. Native of Tropical America.

G. magnifica.—Stem somewhat stout, with blackish sheathing petioles; leaves from two to three feet in length, and from nine to twelve inches in breadth, plaited, and unequally pinnate, with a deep bifid apex. It is a very beautiful species. Native of Chiapas.

G. Martiana.—To say that this is a superb plant, when all the genus are so beautiful, will convey no idea of its beauty—the plant must be seen to be appreciated. The stem is somewhat stout; petioles sheathing at base, and about six inches in length; blade of the leaf one to two feet long, narrowest at the base, where it only measures some two inches across, gradually widening towards the apex, where it is deeply bifid and nine inches in width. The leaves are much plaited, in a young state reddish crimson, changing with age to a deep metallic green. It should be in every collection. A form of this plant is in cultivation under the name of *G. Seemanni*. Native of Costa Rica.

G. Porteana.—This elegant and rare species has a smooth slender stem; leaves pinnate, from twelve to twenty inches in length, and beautifully arched; pinnæ sessile, and distant, six to eight inches long, and two

inches broad, the apex deeply bifid. A very ornamental plant for table decoration. Native of Brazil.

G. procumbens.—In this plant we have one of the most majestic species in the whole genus. Stem stout; leaves two to four feet in length, pinnate and arching; pinnæ pendent, upwards of twelve inches in length, from one to two inches in breadth, and very deep green. It should be in every collection. Native of Costa Rica.

G. pumila.—An elegant small-growing species, admirably adapted for dinner-table decoration; the leaves are broad and deeply cleft at the apex, supported upon slender terete petioles, which are sheathing at the base. A very desirable plant. Native of Tropical America.

G. Schottiana.—This is a superb plant for table decoration. Stem slender; petioles sheathing at base, long and arching; leaves pinnate, from two to three or more feet in length; pinnæ long, and tapering to a tail-like point. It is an exceedingly handsome plant, well deserving a place in every collection. Native of Brazil.

G. undata.—This is a large-growing species, with a stout stem, measuring from nine to twelve inches in circumference; leaves irregularly pinnate, arching, and from two to three feet long; pinnæ plaited, terminal one deeply bifid, dark green; petioles sheathing, enclosed at the base in a rough fibrous tissue. Native of Caraccas.

G. Verschaffeltii.—A beautiful plant; leaves upwards of two feet long, unequally pinnate, the terminal lobe broad and deeply cleft, full deep green on both surfaces; petioles flat, sheathing at the base, where they are furnished with long brown woody fibres. Native of Chiapas.

G. Willdenovii.—This is to be found in some collections under the name of *G. Porteana*, which it much resembles, although distinct; neither is it so rare, but it well deserves

the attention of all lovers of this elegant genus. Native of Tropical America.

GRIAS.

A tree of very stately growth, well deserving a place in every stove. It is of quick growth, and very striking in character. It should be potted in rich loam, and a small portion of peat. When grown upon a single stem, and sufficient room can be given it, the effect of its large leaves towering above other plants is very striking. It may be increased by cuttings of ripe wood in spring.

G. cauliflora.—This is known by the name of Anchovy Pear, the fruits being somewhat pear-shaped, russet brown in colour, and after being pickled are said to be eaten in the same way as Mangoes. The leaves are between three and four feet long, and about nine inches broad, of a rich dark green. The flowers are not handsome, but very sweet, and are peculiar in being produced on short peduncles from the old stem, far below any of the leaves. It is a native of Jamaica, and various other places throughout the Spanish Main.

G. zamorensis.—Another noble-growing plant of recent introduction. The leaves are ovate-lanceolate in shape and from one to two feet long; from what we have seen of this plant, it bids fair to attain first rank as a striking ornamental foliage plant. Native of Loxa, South America.

GUILIELMA.

The only species of this genus known is a cultivated plant, and its origin is a mystery. It is largely cultivated by the Venezuelians, Brazilians, and Peruvians, and is abundant in and about the Indian villages, but it has never been discovered in a wild state. The stems are tall and slender, densely armed with long black spines.

As a genus it appears to be very nearly allied to *Bactris*. The flower spike is branched, and the flowers, although unisexual, are produced upon the same branch. The fruits are produced in large pendulous bunches, ovate, about the size of a peach, and one-seeded; a variety however exists which is destitute of any seeds; when ripe the fruits are richly coloured yellow and red, and have somewhat the flavour of a chestnut when cooked. These plants should be potted in loam and vegetable mould, in equal parts; the pots must be well drained, and a liberal supply of water given. Multiplication is effected both by suckers and seeds.

G. speciosa (The Peach Palm of the Amazon).—Is a very elegant plant. When young it is well adapted for table decoration, and forms a beautiful ornament in the plant stove. In this state the stem is slender, with leaves from two to four feet in length, pinnate, the petioles broadly sheathing at the base, and they are thickly armed with slender long black sharp spines; the pinnæ are about twelve inches long, and one wide, and deep green; the apex is, however, broader, and bifid; the nerves on the upper side are clothed with slender black bristles. When this plant obtains maturity, the stems reach some sixty or eighty feet in height, producing pendulous leaves about seven feet in length, and they usually grow in clusters, having a beautiful appearance. The plant has been introduced to our gardens from the Amazon.

HIBISCUS.

This is a large genus of Malvaceous plants, containing annual, perennial, and arborescent species, some of which are hardy, and others tender. The beautiful *Hibiscus rosasinensis* is a charming shrub, cultivated for its showy

flowers (of which there are several varieties), and the plant here introduced is a variety producing exquisitely variegated leaves. It requires to be grown in the stove to develop its full beauty, but during the summer may be kept in a warm greenhouse. It should be potted in the ordinary compost of peat and loam, and is increased by cuttings.

H. Cooperi.—This handsome plant is most desirable for the decoration of the plant stove, and when nicely grown, it is no mean object on the festive board, its gay and brilliant coloured leaves adding materially to the effect of the table. The leaves are irregularly ovate-lanceolate in shape, cuneate at the base, and bluntly serrated at the edges, the ground colour vivid green, splashed and blotched with dark olive green, creamy white, and crimson, and margined, in addition, with a broad and irregular feathery border of reddish carmine. The young branches, the footstalks of the leaves, and the stipules are of the same colour. It is easily grown into a handsome bush, and is one of the prettiest plants that can be grown, especially in a small collection. Native of the tropical islands of the Pacific.

HIGGINSIA.

A Rubiaceous genus, better known by the name of *Canpylobotrys*, which latter name the species have borne for a long time in our gardens, but it seems erroneously. The *Higginsias* are all plants of easy culture, and though not attaining any great size, are still plants of great beauty, well deserving more attention than they are receiving at the present time from the hands of plant growers generally. They should be potted in good fibrous peat, adding a little loam, leaf mould, and silver sand. The pots must be well drained, and a liberal supply of water

given ; the plants must also be well shaded from the direct rays of the sun. Being in most instances of low growth, they have a very nice effect when used to clothe the surface of the pots of some of the larger-growing stove plants. They are easily increased by cuttings, at almost any season of the year.

H. argyroneura.—This is a dwarf-growing handsome species. The leaves are from five to ten inches in length, spathulate, and of a very dark metallic green colour, almost, indeed, approaching to black, and peculiarly plaited, the under side being of a dull reddish purple. It is a most beautiful plant, and well deserves the attention of all plant growers. Native of South America.

H. discolor.—The oldest species in cultivation, and a plant that will be better remembered by the name of *Campylobotrys discolor*, under which name it has long been known in our gardens. The leaves are some six inches long, obovate-elliptic, and of a dark olive green, with a satiny lustre on the upper side, and somewhat plaited ; the under side is dull red. Native of Brazil.

H. Ghiesbreghtii.—This is a taller-growing species than either of the others here enumerated, and when well grown forms a dense specimen three to four feet high. The stems are winged at the angles, and green ; leaves from nine to twelve inches long, oblong-lanceolate in shape, tapering to a point, and narrowed at the base, the upper surface of a uniform dark rich velvety green, the lower reddish purple ; the flowers are inconspicuous. Native of South America.

H. pyrophylla.—The present species produces leaves from six to nine inches in length, somewhat spathulate in shape, and densely clothed with short fiery red hairs, giving the whole plant a distinct and beautiful appearance—indeed, it

is one of the most desirable of the genus. Native of South America.

H. refulgens.—An erect-growing dwarf plant; the leaves are from three to six inches long, somewhat obovate, and subacute, in texture fleshy, and in the ground colour heavy green, beautifully suffused with deep red, the under side pale red. It is an elegant plant, requiring little care or space to develop its beauties. Native of South America.

H. regalis.—This is another fine species, well deserving every attention. The leaves are from six to nine inches long, rotund, or broadly ovate, suddenly tapering to a point, and peculiarly plaited; the colour on the upper side is a deep olive green, beautifully relieved with a bloom almost similar to a ripe plum; the lower side is of a uniform rich deep red. Native of South America.

H. smaragdina.—This is an elegant and very distinct plant, not so tall in growth as the preceding species, neither has it the deep colour so prevalent in this genus. The leaves are from three to six inches in length, somewhat spatulate, light apple green, and plaited. Well deserving a place in every collection. Native of South America.

HIPPOMANE.

A small genus of *Euphorbiaceæ*, typical of a section of the order. These plants form handsome specimens in the stove, and can be grown into good specimens with little trouble. Pot in a compost of two parts peat, one part sand, and one loam; they are increased by cuttings.

H. spinosa.—An elegant erect-growing plant, with alternate leaves about eighteen inches long and three inches broad, obtuse at the apex, lobed at the edges, each lobe being armed with a long sharp spine, dark green on the upper side, paler below. Native of Brazil.

HOMALONEMA.

A genus of *Arads* containing several plants of considerable beauty, which form handsome specimens for the decoration of the stove, drawing room, or sub-tropical garden. In the latter situation the chief requirements are abundant drainage and shade. They are easily managed, and should be potted in rich loam and peat, in the proportion of two parts of the former to one of the latter, to which a portion of either river or silver sand should be added. These plants are increased by suckers, and by cuttings of the old stem.

H. rubescens.—In habit this plant resembles an *Alocasia*. The leaves are borne upon blood red footstalks, and are cordate, about eighteen inches in length, and of a deep bronzy red colour. It is a beautiful species, well deserving general attention, being equally at home in the sub-tropical garden as in the stove. Native of the East Indies.

H. Wendlandii.—A fine species. The footstalks are some two and a half feet in length, dark red at base, passing into green towards the blade, which is sagittate-cordate, about eighteen inches in length, and twelve inches in breadth, the upper surface dark green, superbly polished and paler below. Native of Central America.

HYOPHORBE.

The Palms comprising this genus are all massive and elegant objects, well deserving cultivation, even in the most limited collection of ornamental-leaved stove plants. They are frequently grown under the name of *Areca*, from which, however, they differ considerably. They attain a medium height, and bear aloft a crown of graceful pinnate leaves. The flowers are usually unisexual, but produced

on distinct trees, though more rarely they are both found upon the same spike. The flower spike, which is simply branched, is produced below the oldest leaves, and has a single spathe at its base. Fruits one-seeded. Pot these plants in loam and peat in about equal parts, with some sand added. They like a liberal supply of water, and therefore should be drained well.

H. amaricaulis.—A noble and massive species, even in a young state. The stem is very stout and much swollen at the base; trunk and petioles very stout, deep maroon, glaucous, with an orange line extending along the outer edges of the mid-rib; leaves pinnate, erect when young, ultimately spreading from four to six feet in length; pinnæ stout, broad, and closely set together, about two inches in breadth, tapering to a fine point, and rich full green on both sides; whole plant quite smooth. This plant is also known in collections as *Areca speciosa*. Native of the Mauritius.

H. indica.—This is at present an extremely rare plant in cultivation, but its elegant appearance will cause it to become a general favourite. The stem is slender, quite destitute of spines, somewhat swollen at the base, and, as well as the petioles, slightly glaucous; leaves pinnate, from two to twelve feet in length, and beautifully arched; pinnæ from one to two feet in length, and nearly two inches in breadth, tapering to a fine point, and full rich green on both surfaces. The present plant must not be confounded with one which is frequently found in collections under this name, and which we have referred to *Areca*. Native of the Mauritius.

H. Verschaffeltii.—Another really grand species, well deserving general cultivation. The stem is very stout and where sheathed with the old petioles it is quite tri-

angular. The leaves are from four to six feet in length, pinnate; petiole broadly sheathing at the base, glaucous brown, having a bright orange stripe extending up the back from base to apex; pinnæ from eighteen to twenty-four inches in length, and upwards of an inch in breadth, tapering to a fine point, dark green, with the mid-ribs white; the whole plant is perfectly smooth. It is frequently found in collections under the name of *Areca Verschaffeltii*. This forms a magnificent object in the stove, and is a fine plant for public exhibition. Native of the Mauritius.

HYPHÆNE.

The present genus of Palms is remarkable in this, that while the species, when young, have only simple stems like the majority of this order, yet as they acquire age they invariably become branched. A few examples of other Palms producing branched stems are upon record, but the plants referred to this genus are invariably so when aged. It was originally supposed that *Hyphæne* contained only one species, which is very common throughout Nubia, Arabia, and Abyssinia, growing to the height of twenty and thirty feet. The researches, however, of Baikie, Livingstone, and Speke and Grant have not only proved that the original species has a much wider distribution, but have added several more species to the genus. In Upper Egypt the fibrous mealy covering of the fruit forms a considerable portion of the fare of the lower classes, and the peculiar flavour of which has given rise to its popular name of Gingerbread Palm. The fruits of *H. thebaica* are large, and so also are those of a species sent home by Dr. Livingstone, whilst those of a species discovered by Speke and Grant are small (not larger than a large marble), and perfectly round. The flowers are

produced upon long branching catkin-like spikes; they are unisexual, and the sexes are produced upon separate trees. Fruits produced in clusters of from one to two hundred, one-seeded.

H. thebaica.—The Doum Palm, or Doom or Dum Palm, but more popularly known as the Gingerbread Palm. The stem is branched, and each branch terminates in a tuft of large fan-shaped leaves, from amongst which the branching catkins are produced. Native of Nubia, and the adjacent countries. It is an extremely difficult plant to cultivate.

IRIARTEA.

This genus of Palms has the peculiarity of supporting its stems upon a cone of long prickly roots, so that the base of the stem is often five or six feet from the ground, and some instances are recorded of large specimens having a cone of roots ten or twelve feet high, with a stem upwards of fifty feet in height. The leaves are pinnate, and the pinnæ are somewhat trapezoid. The flower spikes produce unisexual flowers of both sexes upon one spike, and although they are enclosed by several spathes, it is only the inner one which completely covers them. The fruits are somewhat oval, and one-seeded. *Iriarteas* are elegant pinnate Palms, but extremely difficult to cultivate; they should be potted in nearly all loam and sand, and plunged in a tank of water, without which it is impossible to keep them alive. Seeds are the chief means of multiplication.

I. gigantea.—An elegant plant, but at the same time one of the most difficult Palms to cultivate. Stem slender; petioles sheathing; leaves pinnate, and from two to six or more feet in length; pinnæ six to eighteen inches in length, wedge-shaped at base, expanding to a broad

erose apex; apical pinnæ much larger than the others; colour a rich dark green on both sides. Whole plant destitute of spines. Native of Tropical America.

I. robustus.—A very handsome plant, quite destitute of spines. Petioles round, sheathing at the base; leaves pinnate; pinnæ about two inches broad, sessile, erose at the apex, and full dark on both sides; the apical pinnæ much larger, being from six to twelve inches in length, and from six to eight inches in breadth. It is a very elegant and distinct plant, known in some collections by the name of *Catoblastus robustus*. Native of New Grenada.

IRIARTELLA.

As the name implies, these plants may be regarded as small *Iriarteas*; indeed, some trifling differences in the flowers furnish their only distinction, and it is questionable if it is really a good genus. The stems are more slender, and do not attain to the dimensions of the last-named plants; but soil and treatment should be exactly similar.

I. setigera.—This is an elegant plant, with a slender stem some twelve or eighteen feet high, but seldom exceeding an inch in thickness. From the stem of this Palm the Indians form the blow-pipe (or Gravatana) from which they discharge their poisoned arrows. The plant is rare in cultivation, and is very similar in appearance to a miniature *Iriarte gigantea*.

IRISINE.

A genus of *Amaranthaceæ*, containing many plants possessing no horticultural merit; some few, however, are highly ornamental on account of the colouring of their

leaves. For flower-garden purposes these plants take first rank, and for the decoration of the dinner table they are also particularly serviceable. They are plants of rapid growth, and can therefore be readily increased by cuttings. The soil should be peat, leaf mould, and loam, in equal proportions, with a little sand.

I. Herbstii.—This is one of the most ornamental-foliaged plants for bedding purposes that have ever been introduced. It grows from twelve to eighteen inches high, or more, but can be easily kept to any size by frequent pinchings. The leaves are opposite, somewhat cordate in shape, deeply bilobed at the apex, and concave; the stem and branches are bright carmine, almost transparent; the upper side of the leaf is dark maroon, the mid-rib and primary veins being broadly margined with carmine, the under side is a uniform deep crimson. It has the advantage of never flowering when used for greenhouse or out-door decoration, and withstands the cold and damp of our summer and autumn climate well. To grow *Iresine Herbstii* properly for table decoration, it must be kept in the stove, where the beautiful transparent carmine veins come out much brighter than in a lower temperature, and where it produces its nodding panicles of white flowers, which add materially to its grace and beauty for this purpose. Native of Brazil.

I. Herbstii acuminata.—A variety of the preceding, with large leaves, which, instead of being deeply bilobed at the apex, are sharply acuminate. Should this remain constant, and as hardy as the species, it will be a great acquisition. A garden variety.

I. Lindenii.—A most effective and beautiful compact-growing plant. Like the former species, it has not a green spot about it; the leaves are narrow, oblong-lanceolate in

shape, rich deep blood red in colour, with a band of amaranth running down the centre of each. It is a most striking plant, and may be used either in the stove, or warm greenhouse, or out of doors during summer with advantage. It is a native of the Peruvian Andes, where it grows at an elevation of 9,000 feet.

JUBÆA.

The present genus of Palms is characterised by having the branching flower spike enclosed in a double spathe; the flowers are unisexual, but produced upon the same spike; and the fruits somewhat ovate, and one-seeded. *Jubæa* grows farther south than any other American Palm known. It is a very handsome hardy plant, thriving admirably in the greenhouse, and for the sub-tropical garden during summer it is specially adapted. The soil for these plants should be rich loam, two parts, the remaining two parts to be composed of peat, leaf mould, and sand. They are increased from seeds. It is sometimes found in collections under the name of *Molinæa*.

J. spectabilis (the Coquito Palm).—Leaves pinnate and spreading, six to twelve feet in length; pinnæ twelve to eighteen inches long, and about an inch wide, springing in pairs from nearly the same spot, and standing out in different directions, full deep green; the petioles very thick at the base, where they are broad, and enclosed in a dense mass of rough brown fibres which grow upon their lower edges. As the plant attains maturity it is said to develop a stout cylindrical trunk, and to form a majestic tree, but we have not seen it in cultivation larger than we have described. It is a native of Chili, where the boys use its seeds in the same manner as do the boys of this country their marbles.

KENTIA.

A genus of greenhouse Palms, sometimes included in the genus *Areca*, from which, however, it has been separated by our best authorities, one of its distinguishing characters being a decumbent growth in its young state, whilst *Areca*s are erect in growth from the earliest stage. The *Kentias* are handsome robust plants, with pinnate leaves, which, together with petioles and stem, are quite destitute of spines. They are splendid objects for the decoration of the greenhouse or conservatory, and succeed admirably during the summer months in the sub-tropical garden, and in addition may be used with splendid effect as table decorators, when in a young state. The soil best adapted for their cultivation is a mixture of loam and peat in about equal proportions, adding a little silver or river sand to keep it open and sweet. These plants require an abundant supply of water and ample pot room. They are increased from seeds.

K. Baueri.—A species of great beauty, attaining a height of twenty feet (exclusive of its crown of fronds) in its native country. The leaves are from six to twelve feet long, pinnate; pinnæ eighteen inches to two feet in length. The flowers are produced upon a branching spadix, and are ivory white, succeeded by bright scarlet shining globose berries: this is a description of the plant when some years old. In its young state it is a handsome window plant, or is well adapted for vases in sitting rooms, and for the decoration of the dinner table; and in its larger state it forms a magnificent object during summer in the sub-tropical garden. It is to be found in collections under the name of *Areca Baueri* and *Seaforthia robusta*. Native of Norfolk Island.

K. sapida.—This bears some resemblance to the preceding ; it is, however, more slender in all its parts, and the fruits are smaller, and oval. It produces a beautiful crown of pinnate bright green leaves, which lend a charm to greenhouse or conservatory, as well as the sub-tropical garden. In a young state it is well adapted for the decoration of apartments, and should be in every collection. Native of New Zealand.

LATANIA.

A handsome family of Palms with large fan-like leaves ; they form splendid objects for the decoration of the stove, greenhouse, or sub-tropical garden in summer, and in a young state they form beautiful window plants. The species of this genus are easily grown into good specimens, and should be potted in a mixture of rich loam and peat, in the proportion of two parts of the former to one of the latter, adding a portion of sand. The drainage should be good, for although these plants enjoy an abundant supply of water, it should not be allowed to stagnate in the soil. They are multiplied by seed. This small genus of Palms, which are all natives of the African Islands, is characterised by the male and female flowers being produced upon separate plants, the former being produced in abundance upon the spikes, whilst the females are much less plentiful. The fruits are three-seeded, each one being enclosed in a hard shell.

L. aurea.—A superb plant, sometimes found in collections under the name of *L. Verschaffeltii*. The stem is stout, and reaches some twenty feet in height ; with us, however, but very little stem has been developed at present. The petioles are stout, erect, yellow, slightly glaucous at the base, unarmed, from two to four feet in

length, supporting large, plaited, palmate leaves, measuring from two to three feet from the point of attachment to the margin; these are split down for half their length, forming narrow segments, rich bright green on both surfaces, and in addition the mid-rib of each on the under side is deep red. Native of the Island of Rodriguez, one of the dependencies of the Mauritius.

L. Commersonii.—This is a grand and massive plant. The petioles are stout, and glaucous at the base, tinged with red towards the top. The flabellate leaves are large, bright shining green, except the nerves, which are crimson, the young leaves being wholly crimson before they have expanded. It is frequently known in collections as an inferior variety of *L. rubra*, its inferiority being, however, only applicable to the want of colour, which the last-named plant retains in all its stages; otherwise it is a noble ornament to the plant stove. Native of Round Island, one of the dependencies of the Mauritius.

L. glaucophylla. — This plant assumes gigantic proportions, and from what we have seen, its leaves attain their full size by the time it begins to form the stem. The petioles are from two to eight feet in length, stout and spreading, very glaucous green, in young plants slightly tinged with red, this, however, it loses as it acquires age. The leaves are palmate, plaited, from two to four feet or more from point of attachment to the margin, split down about one-third their length into broad segments; colour bright green, with a somewhat glaucous hue. A splendid plant for the sub-tropical garden; it is sometimes known by the name of *L. Lodigesi*. Native of one of the dependencies of the Mauritius.

L. rubra.—Undoubtedly the finest species of this genus. The petioles are erect, spreading, from two to four feet

in length, quite smooth, and deep crimson, slightly glaucous at base. The leaves are palmate, plaited, measuring from two to three feet from the point of attachment to the margin, where they are split into segments for about half their length; colour rich shining bronzy green, changing with age to dark green. Native of the Mauritius.

LEUCADENDRON.

A Proteaceous genus, which we have introduced here in order to draw particular attention to one species, the Silver Tree of the Cape of Good Hope. This beautiful plant, although introduced so long ago as the year 1693, is rarely to be found in cultivation, but it is never seen without eliciting the praise of all for its extreme beauty. We have never seen it very large, although in its native localities it attains a height of fifteen or twenty feet, in which state it probably is not so handsome as when younger. The soil should be peat and loam, about two parts of the latter to one of the former, to which add a little sand and a few lumps of sandstone; the drainage must be carefully attended to, as stagnant water about the roots is certain to kill the plant. In watering, never allow the water to lie in the heart of the plant, as it is apt to rot the crown, and thus not only destroy the beauty, but cause its speedy death. *Leucadendrons* are increased by seed, which should have but a very slight covering of soil, the seed pot being placed in a gentle heat; and also by cuttings of well-ripened wood, placed in sand under a bell-glass, kept cool for a week or two, and then removed into a brisk heat.

L. argenteum. — This is an elegant plant, growing in its native habitat from fifteen to twenty feet high; with us, however, it has not attained such proportions. It is

called the Silver Tree by the colonists of the Cape, on account of the shining white of its leaves, which are densely clothed with pure white and shining satiny hairs. The leaves are closely set upon the stems, lanceolate in shape, from four to six inches long and nearly an inch broad, in colour a beautiful silvery white, and soft to the touch. It also produces a terminal head of yellow flowers, which, however, are only of secondary importance. This is without doubt one of the most attractive and ornamental greenhouse plants in cultivation, and young plants produce a striking and peculiarly beautiful effect upon the dinner table. Native of the Cape of Good Hope.

LICUALA.

A genus of elegant fan-leaved Palms, belonging to the section *Corypheæ*. They are of somewhat slow growth, and seldom exceed ten or twenty feet in height, exclusive of their crown of fronds, but some species are much dwarfer. The genus is characterised by its small branching flower spike, which bears perfect flowers. *Licuala acutifida* is the plant which, in Pulo-Penang, yields the much-esteemed walking canes known as "Penang Law-yers." To grow these plants well, they should be potted in a mixture of two parts peat and one of sandy loam, and if possible, placed in a tank of hot water, at a temperature of 75° or 80°, plunging the pots into the water about as high as the drainage reaches, for *Licualas* luxuriate in a strong moist heat. They are increased from seeds, though sometimes a few side shoots are made from the base; these should be taken off with roots, if possible, and carefully treated until established.

L. elegans.—A slow-growing plant. Leaves fan-shaped, and supported upon erect petioles, some two or three feet

in length, and armed on both edges with long stout black spines. The leaves are divided into segments quite down to the point of attachment, the segments plaited, præmorse at the ends, about eighteen inches in length, and of a light shining green colour. Native of Sumatra.

L. horrida.—This is a plant somewhat similar to the preceding, with dark green plaited fan-shaped leaves of considerable size; the petioles are stout, and armed at the edges with very stout and formidable-looking spines. When well grown it forms a beautiful object for exhibition purposes, and for the decoration of the stove, but is not sufficiently hardy for the greenhouse or conservatory. Native of the Indian Archipelago.

L. peltata.—Another handsome species, similar in many respects to the first-named species, the leaves, however, are of a darker green, præmorse at the margins, and divided into segments down to the ligule. It is a very ornamental stove plant. Native of the East Indian Islands.

LIVISTONA.

A grand and noble genus of Palms, the leaves of which are strong in texture and supported upon stout petioles, their bases enclosed in a mass of netted fibres, and mostly armed with spines along the edges. They are suitable for general decorative purposes, as well as for public exhibition. If these plants are used for the sub-tropical garden, they should be somewhat shaded by surrounding trees. *Livistonas* are all strong robust plants, with large flabelliform leaves, and stout stems, varying in different species from ten to a hundred feet in height; they are widely distributed through the East Indies and the Indian Archipelago, extending even to the Australian continent. The flower spikes are branched, and produced

from amongst the leaves, the footstalks being sheathed with several abortive spathes; the flowers are perfect. Fruits clothed with a dry skin, one-seeded.

Being strong rooting plants, they should be potted in a compost consisting of two parts loam, and one peat, with a little sand added; they should, however, be liberally supplied with water during summer, and although less is required in winter, they must then by no means be dried or allowed to suffer. Increased by seeds.

L. altissima.—A noble plant, the stem as it acquires age becoming stout, and of considerable height. In a younger state the petioles are from two to six feet in length, the upper part green, the base brown, enclosed in a reddish brown network of woody fibres, and armed on each edge with stout and sharp recurved black spines. Its fan-like plaited leaves are eighteen to twenty-four inches from point of insertion to the margin, and divided into segments about one-third the way down, each segment bifid at the top; colour bright shining green. Native of the Indian Archipelago.

L. australis.—This is one of the most useful and ornamental greenhouse Palms in cultivation, perhaps better known to many of our readers by the name of *Corypha australis*. This plant with age attains noble proportions; as a young plant it has stout dark brown petioles enclosed in a network of fibrous matter at the base, and armed at the edges with stout spines; the leaves are nearly circular, much plaited, divided round the edge into narrow segments, and dark green. It forms a splendid specimen in the conservatory, and is equally at home in the sub-tropical garden during summer, where it also produces a beautiful effect. Native of Australia.

L. borbonica.—This is a well-known and favourite species,

perhaps better known as *Latania borbonica* and *Livistona chinensis*. The leaves are large, fan-shaped, with pendent marginal segments; they are supported upon petioles, some four or five feet in length, rounded below, flat above, and armed edges with short reflexed spines, enveloped at the base in a net-work of brown fibrous tissue. The hardy constitution and cheerful green of the whole plant, render this eminently adapted for general decorative purposes, either within or without doors. Native of the East Indies.

L. Hoogendorpii.—A superb and majestic stove species, at present somewhat rare in cultivation. Petioles stout, blackish brown, enclosed in a network of reddish brown fibres, and armed at the edges with long, stout, and sharp spines; the leaves form a complete circle, much plaited, deeply divided into segments, and rich dark green. Native of the Indian Archipelago.

L. humilis.—When mature this plant has a stout tall stem and large crown of leaves. In a young state it is a beautiful species for greenhouse decoration and for the adornment of the drawing room, and plants sufficiently grown make a splendid appearance in the sub-tropical garden. The petioles are clothed at their edges with close-set spines. The leaves are large, fan-shaped, spreading, and dark green. Native of Australia.

L. Jenkinsiana.—This fine plant forms a beautiful ornament to a greenhouse, and is valuable for producing a tropical effect in the open air during the summer months, while young specimens form handsome objects in the window or as table decorators. The petioles vary in length from two to ten feet, according to the age of the plant; they are somewhat keeled below, flat above, and armed at the edges with very stout sharp-pointed

spines, which are slightly recurved. The leaves are fan-shaped, two to four feet across, plaited, and of a rich dark green; the margin is divided into somewhat broad segments. Native of Sikkim.

L. olivæformis.—This is a very handsome species, the *Saribus olivæformis* of some authors. In a young state this somewhat resembles *L. altissima*. The petioles are from two to four feet in height, stout, brown at the base, and enclosed in a tissue of dark brown netted fibres, armed with a few small reddish spines. The leaf is rather reniform than flabellate, from two to three feet from the point of attachment to the margin, divided into pendulous segments for about one-third of the length, and of a shining dark green in colour. Native of Java.

LODOICEA.

A genus belonging to *Palmaceæ*, which contains but one species. It is characterised by its large fan-shaped leaves, which are some ten or twelve feet in diameter, and its straight slender stem, which frequently attains a height of fifty or sixty feet. The flowers are unisexual, and produced upon separate plants, though both sexes are similarly constructed in their outward parts. The fruits are immensely large, and clothed with a similar fibre to that of *Cocos nucifera*, and contain one seed (rarely two); the nuts are deeply two-lobed, which has given rise to the name of double cocoa-nut. The soil should be rich loam and vegetable mould in equal parts; the pots should be well drained, as they require an abundant supply of water, and a very strong heat. From the leaves of this plant, the French residents in the Seychelles Islands construct some of the most elegant and *recherché* articles it has ever been our pleasure to see, in the shape of baskets,

fans, hats, bonnets, artificial flowers, and other things, which are of a delicate straw colour.

L. Sechellarum.—This is an exceedingly rare plant in cultivation, and we have introduced it here chiefly with the view of fixing the attention of any one who may have an opportunity of procuring seeds for importation. The plant is rare in its native habitat, and we, therefore, are extremely anxious to see plants of it well established in this country. The seeds are very large, and one of the chief difficulties in establishing this plant is its peculiar manner of germination. The radicle grows down in the form of a stout tap root for three feet or more, and splitting open at the end allows the plumule to ascend, and if at this stage the young plant can be potted, success is likely to ensue. We have several times had plants make a few leaves, but have to record all our efforts unsuccessful to thoroughly establish them. It is a native of the Islands of Praslin and Curieur, in the Seychelles group.

LOMATIA.

A small Proteaceous genus including several plants of elegant growth, which should be extensively grown as ornaments for the greenhouse or conservatory. In these days also, when the fashion is to wear a flower in the coat, a leaf of *Lomatia silaifolia* forms the most elegant background for a *Rose*, a truss of *Pelargonium*, a sprig of *Erica*, or indeed almost any flower, and therefore is valuable on that account. These plants should be grown in equal parts of loam, peat, and sand, with ample drainage. They may be increased by cuttings of well-ripened wood under a bell-glass, placed in moderate heat.

L. elegantissima.—The leaves of this species are about six inches long, bipinnatifid, and most elegantly divided,

resembling very much a small frond of some of the finely cut *Davallias*, but more coriaceous in texture, and bright dark green on both surfaces. This should be in every collection. Native of New Zealand.

L. ferruginea.—This is a larger-growing plant than the preceding, but extremely handsome in its own way. The leaves are bipinnatifid; the pinnæ somewhat ovate, and trifid at the points; the petioles and back of the leaf clothed with a short tomentum, the upper side is very dark green. Native of the southern parts of Chili.

L. silaifolia.—A more spreading plant than either of the preceding. The leaves are bipinnatifid, and smooth; pinnæ lanceolate, irregularly cut, and acute, the under side slightly glaucous, but bright green above, the reticulated veins being prominent, and adding considerably to its beauty. Native of South Australia.

MACROZAMIA.

This is an Australian genus of *Cycadaceæ*, admirably adapted for the decoration either of the stove, greenhouse, or sub-tropical garden during summer. They grow naturally on open forest land, among various species of *Eucalyptus*, *Acacia*, &c., none of which afford them much shade, and the soil in such situations is usually sandy or stony, and not rich. They succeed well potted in a compost consisting of a sandy loam two parts, peat one part. To the foregoing remarks, however, an exception must be made in favour of two plants which, unlike the others, are found in very shady spots about the borders, or in dense scrubs, where the atmosphere is more moist, and the soil contains more decomposed vegetable matter, and this they require in cultivation; these are the plants which have been introduced to our gardens under the name of

Catakidozamia Hopei and *C. McLeayi*, but which have been reduced to the genus now under consideration, by those well versed in the order *Cycadeaceæ*.

M. Denisoni.—A noble plant, reaching, as we are told, the height of sixty feet in its native country. This, however, should not discourage the cultivator, for these plants do not rapidly form a stem, but are very slow in growth. Stem slender, in mature plants about a foot in diameter; leaves pinnate, three to six feet in length; petioles glaucous when young; pinnæ entire, linear, from six to twelve inches long, less than an inch broad, dark green above, tinged with red at the base, paler below. This plant has been introduced to our gardens under the name of *Catakidozamia Hopei*. Native of Eastern Australia.

M. Fraseri.—This most beautiful species is very distinct. The stem is some four or five feet in circumference; leaves pinnate, pendulous, and from six to eight feet in length; pinnæ linear, tapering to a fine spiny point, swollen at the base, forming a joint or umbo, light green or greenish white, about six inches long, less than a fourth of an inch in breadth; the upper surface is almost black green, the under side dark green. Native of Australia.

M. McLeayi.—A beautiful plant as far as we are acquainted with it. The leaves are from one to three or more feet in length, bearing long dark green lanceolate acuminate pinnæ. We have heard little or nothing of the history of this species, but judging from the very large seeds which have been sent home, it must produce a gigantic cone. It is known to many collections by the name of *Catakidozamia McLeayi*. Native of Australia.

M. spiralis.—This we only know in a young state, and it appears a very beautiful plant. Leaves pinnate, one

to three feet in length; pinnae linear, bright shining green, except at the base, and there ivory white, forming a broad central white stripe; whole plant unarmed. Native of Australia.

MALORTIEA.

This genus contains some elegant little dwarf plants, so small, indeed, that they may be grown in a Wardian or Waltonian case, and for table decoration they are also eminently adapted. *Malortiea* would seem to be very nearly allied to *Geonoma*. Pot these plants in peat and sand, with a little sandy loam added, and let them be well supplied with water.

M. gracilis.—A beautiful dwarf-growing Palm, with slender stem some two or more feet high. The leaves are supported on very slender petioles, and are of a dark green colour, split into segments, which are toothed at the margin, and the lobes split in the centre so as to cause the name of *fenestrata* to be applied by some authors. It is an elegant plant for table decoration. It is also found in some collections under the name of *Chamædorea fenestrata*, and *Geonoma fenestrata*. Native of Guatemala.

M. simplex.—This species is a dwarf-growing plant with a slender stem. It somewhat resembles the preceding, but is destitute of the peculiar window-like holes in its leaves. In this plant they are somewhat elongate or oblong, bifid at the apex, and dark green. It is an elegant plant for table decoration, and, on account of its small size, can be grown in even the smallest plant stove. It is a native of Costa Rica.

MARANTA.

A genus of very elegant and ornamental plants, a great majority of the species of which have their foliage more or

less variegated, and many of them in the most beautiful manner. As ornamental-foliaged plants for the decoration of the stove, and for exhibition purposes, few plants can equal them, but few of them are adapted for the greenhouse or the window, as, most of them being natives of moist warm places, they consequently cannot withstand a dry cool atmosphere. *Marantas* are plants very easily grown into handsome specimens, if a strong moist heat can be maintained. The soil should be good fibrous peat, with silver sand, and a small portion of rich loam added. The drainage must be good, as although *Marantas* enjoy most liberal waterings, they will not suffer it with impunity to remain in a stagnant state about their roots. These plants are increased by divisions of the roots, which may be done at almost any season, although spring is far the best. Some of the species are referred by botanists to *Calathea* and *Phrynium*; indeed, until flowers are produced, it is impossible to determine to which group they belong.

M. albo-lineata.—This species produces leaves from six to twelve inches in length, and two or three in breadth, ovate-acuminate in shape, the upper surface bright dark green, striped transversely with narrow lines of pure white. It is a handsome species, from Tropical America.

M. Baraquinii.—This is a very distinct and handsome species. The leaves are ovate-lanceolate in shape, and may probably attain a much greater size by cultivation than we have at present seen it; the ground colour is bright green, which is relieved by beautiful bands of silvery white. It is a native of South America.

M. bicolor.—An old but pretty species, of spreading habit. The leaves are orbicular, the ground colour pale glaucous green, whilst midway between the mid-rib and margin, are irregular-shaped blotches of polished dark

olive, which give a peculiar and pleasing appearance to the plant; the under side is rosy purple. Native of Brazil.

M. chimboracensis.—This is a very beautiful plant. The leaves are from six to twelve inches in length, or more; ground colour light green, having a zigzag zone of olive green traversing the entire length, a little distance from the mid-rib, the outer edge of this zone is bordered with white. Native of Ecuador.

M. fasciata.—A very distinct and handsome plant, dwarf in habit, and producing leaves from eight to twelve inches long, and from six to eight inches wide, broadly heart-shaped; ground colour bright green, with broad bands of white running across from mid-rib to the margin, the under side pale green, tinged with purple. A very desirable and ornamental plant, from Brazil.

M. illustris.—This very fine plant is a dwarf grower, but makes leaves of a considerable size, somewhat ovate in shape, the upper surface of a bright pea green, streaked with transverse bands of a deeper green; the mid-rib is pink, and in addition to this, two irregular bands of white traverse the leaves from base to point, midway between the margin and costa; the under side is of a uniform deep purple. Native of Ecuador.

M. Legrelliana.—Another dwarf-growing and pretty species. The ground colour of the leaf is very dark green, which is relieved by a feathery band of white, extending the whole length between the mid-rib and margin. Native of South America.

M. Lindeniana.—A very handsome free-growing kind, with leaves from six to twelve inches long; they are oblong in shape, and deep green in colour, with blotches of yellowish green on each side of the mid-rib; the under side is purplish rose, through which the markings of the

upper side are visible, producing a charming effect. Native of Peru.

M. micans.—This is a lovely little species, certainly the smallest in the genus, as it does not grow more than about six inches high. It has oblong-acuminate leaves, two or three inches in length, and a little more than one in breadth; the colour is dark shining green, with a white feathery stripe down the centre. It is spreading in habit, and quickly forms dense and beautiful tufts. It is a species which should be in every collection. Native of Tropical America.

M. ornata.—Plant from one to two feet high; leaves from six to nine inches long and three or more broad, oblong-acuminate, and yellowish green, relieved by broad transverse bands of dark olive green, the under side tinged with purple. It is an elegant and attractive plant, suitable for either a large or small collection. Native of Columbia.

M. pardina.—A very ornamental plant, said to be a variety of *M. villosa*. The leaves are from ten to eighteen inches long, and five or six wide, ovate, pale green, with large dark brown blotches on each side the mid-rib, and which occur at regular intervals the whole length of the leaf. It also produces handsome large yellow flowers in great abundance. This, unlike the most of its relatives, is a deciduous plant, and requires considerable care to keep it through the winter, for although dormant, it must not be dried, or it will never start into life again. It is a native of the Valley of Magdalena, New Grenada.

M. Porteana.—An elegant erect plant, growing about three feet high, sometimes more; the leaves are oblong-acuminate, bright green on the upper side, striped with transverse bars of white, the under side rich purple. A highly ornamental species. Native of Brazil.

M. princeps.—This is a superb large-growing species, attaining a height of three or four feet. The leaves measure from twelve to eighteen inches in length; the centre of these is rich dark green, broadly margined with yellowish green. It is a very distinct and handsome ornament for the stove. Native of the banks of the Amazon.

M. pulchella.—A plant very much resembling *M. zebrina* in general appearance; it however does not grow quite so strong, and the leaves are not so dark, owing to the under side being destitute of the purple colour which is so conspicuous in the last-named species. The present plant is very ornamental, and well deserves general attention. Native of Tropical America.

M. roseo-lineata.—This species grows from one to three or more feet high. The leaves are from three to nine inches in length, broadly ovate and sharp-pointed, the ground colour dark olive green, with oblique lines of rose colour reaching from near the mid-rib almost to the margin; the under side is deep purple, almost approaching black. A most desirable kind. Native of Tropical America.

M. roseo-picta.—A beautiful plant of dwarf compact habit. The leaves are somewhat orbicular in shape, and of a beautiful rich glossy green; the mid-rib of a lovely rose colour, and midway between the margin and mid-rib are two irregular bands of the same colour, traversing the entire length of the leaf. It is a very handsome and highly ornamental species. Native of Amazon, about Loreta and Iquitos.

M. splendida.—A very fine species, with large oblong-lanceolate deflexed leaves, from ten to eighteen inches long, of a rich dark olive green colour, with distinct blotches of greenish yellow. Native of Para.

M. striata.—Amongst the dwarfest species, seldom growing more than about six inches high; the leaves are about five inches long and two wide, bright green, profusely streaked and striped with white and pale yellow. A very desirable plant, and distinct from any other species. Native of the Philippine Islands.

M. tubispatha.—A most elegant plant, producing leaves from six to twelve inches high, somewhat obovate in shape, and blunt-pointed; the ground colour is pale greenish yellow, beautifully relieved by a row of rich brown oblong blotches, set in pairs on each side of the mid-rib, throughout the entire length of the leaf; it is a very striking and pleasing addition to our ornamental-foliaged plants, and should be in every collection. Native of Western Tropical America.

M. Vanden Heckeii.—A very distinct and handsome erect-growing species, with rich dark green glossy leaves, which are shaded with transverse bands of a lighter green; the mid-rib is broadly margined with silvery white, and in addition two bands of the same traverse the leaf from base to apex, midway between the mid-rib and margin; the under side is of a uniform purplish crimson. Native of Brazil.

M. Veitchii.—This superb plant is the gem of the whole genus at present known to us. It attains the height of two feet, or even more, bearing large ovate-elliptic leaves upwards of a foot long, independent of the foot-stalks; the upper surface is very glossy and rich deep green, marked along each side the mid-rib with crescent-shaped blotches of yellow, which is softened by shades of green and white; the under surface is light purple, and as the variegation of the upper side shows through upon this ground colour, the effect is charming. No

collection should lack this striking and beautiful plant. Native of Western Tropical America.

M. virginalis.—Leaves broadly ovate, of considerable size, varying in this respect according to the encouragement given it. The ground colour is a light pleasing green, the mid-rib white, and having in addition a white band on each side; the under side is of a greyish green colour throughout; a handsome plant, of dwarf compact habit. Native of the Amazon Valley, South America.

M. vittata.—A species which is seldom encouraged sufficiently in our gardens, and consequently does not exhibit its beauties to the fullest extent; when well grown the plant attains the height of three feet or more. The leaves are about nine inches long, ovate-acuminate in shape, and very light green in colour, with narrow transverse bars of white on each side the mid-rib; it should be in every collection. Native of Tropical America.

M. Wallisii.—This species is of somewhat recent introduction; it is very distinct, and will form a pleasing contrast to the other members of this genus. The leaves are moderate-sized, and of a peculiar and pleasing light green, beautifully relieved with a ray of rich dark green. Native of Peru.

M. Warscewiczii.—A noble-growing plant, attaining a height of three feet or more. The leaves are two feet long, and about eight inches wide, deep velvety green in colour, relieved by a feathery stripe of yellowish green on either side the mid-rib, and which extends from the base to point. It is well deserving general cultivation. Native of Central America.

M. zebrina.—This is an old inhabitant of our stoves, but it is a noble-growing plant, producing leaves from two to three feet long, and from six to eight inches or more

wide; they are a beautiful velvety light green on the upper side, barred with greenish purple, the under side being of a uniform dull purple. It is also known as *Calathea zebrina*. Native of Brazil.

MARTINEZIA.

An exceedingly ornamental genus of American Palms, which form small trees rarely exceeding twenty feet in height. The leaves are pinnate, and the pinnæ cuneate. The flower spike is enveloped in a double spathe, and but little branched. The flowers are unisexual, but produced on the same spike, both sexes having flowers with three-parted sepals and petals. The fruits are round, and one-seeded. To grow these Palms successfully, pot them in sandy loam and peat, in about equal parts. They enjoy a strong heat and an abundance of water. *Martinezias* when in a young state may be used with good effect for table decoration, without the slightest injury, and from their distinct character should find a place in every collection. They are increased by seeds.

M. caryotæfolia. — Stem slender, and, as well as the petioles and back of the leaves, densely clothed with long black spines. Leaves pinnate, three to six feet in length; pinnæ cuneate, præmorse, from six to twelve inches in length, from four to six inches in breadth at the apex, and full dark green on both surfaces. The arrangement of the pinnæ is very peculiar, as several pairs are produced in close proximity, and succeeded by six or ten inches of bare petiole. It is a very ornamental plant. Native of Peru, &c.

M. Lindeniana. — This very distinct and handsome plant bids fair to become useful, not only as an ornament to the stove, but also to the dinner table, and for public

exhibition purposes. It is of recent introduction, and we only know it as a young plant, in which state the leaves are pinnate, the terminal pinnæ being considerably the largest; the sheathing petiole is profusely armed with long sharp slender black spines; the upper surface is smooth and bright green, paler below. This elegant plant is deserving general cultivation. Native of Tropical America.

MAURITIA.

An elegant genus of Palms peculiar to South America, some of the species attaining a great height, and supporting a crown of large leaves, which are apparently fan-shaped, an appearance which is brought about by the rachis near the apex being so much contracted, that the pinnæ seem all to spring from the same or nearly the same place, but it is not a truly fan-shaped leaf. The flower spikes issue from among the leaves, and are pendulous and branching. The flowers are unisexual, and produced upon distinct plants, but sometimes are found mixed together. The fruits are large, clothed with hard scales, overlapping like a coat of mail. These plants mostly grow upon the river banks, and during the overflowing of the great American rivers, they are the resort of the Guaranés Indians, who erect stages in their tops, upon which they dwell until the water subsides. *Mauritias* should be grown in loam and peat, and the pots should be stood in deep pans of water, or plunged in a tank if such convenience exists. They are increased by seeds.

M. aculeata.—This is one of the few species of this genus which it is possible to cultivate. It is a beautiful plant, with somewhat pinnate leaves, which are bright green on the upper side and white below. This plant requires to be

potted in equal parts of peat and loam, and the pot must be either plunged into a tank or placed in a deep pan of water—out of water we have not found it possible to keep it alive. It is a very singular and beautiful stove Palm. Native of Tropical America.

M. flexuosa.—Another superb plant, which must be grown standing in water. The petioles are quite smooth, broadly sheathing at the base; leaves forming a complete ray, and split into segments quite down to the rachis; these are pendent and dark green, producing a very graceful effect. Native of Tropical America.

MAXIMILLIANA.

This small genus contains the most majestic and handsome Palm yet discovered upon the American continent. The stems are slender and quite destitute of spines, and are reported to exceed in some instances a hundred feet in height. The flower spikes are branched, and completely enclosed in a woody boat-like spathe, some five or six feet in length, and two in breadth; these spathes remain upon the trunk several years after the flowers and fruit have fallen away, and present an exceedingly curious appearance; the flowers are unisexual, frequently produced upon the same spike, but sometimes only upon separate ones. As a genus it is evidently allied to *Cocos*, and requires the same treatment.

M. regia.—This plant is only known to us in a young state. The leaves, when mature, attain a length of from thirty to fifty feet; they are pinnate, the pinnæ being long, narrow, pendent, and dark green. It forms a beautiful object in the stove, and also for the decoration of apartments. Native of South America.

MIMOSA.

A somewhat extensive genus, belonging to the order *Fabaceæ*, many of them remarkable for handsome flowers, but none, that we are aware of, possessing much beauty in foliage. The name is derived from *Mimos*, a mimic, in allusion to the animal sensibility displayed more or less by all the species, and upon this account we have introduced the most remarkable kind in this place. The soil best adapted for this genus is loam and peat in about equal parts, with a small portion of sand.

M. pudica.—This is usually called the *Sensitive Plant*; *Mimosa sensitiva* is, however, the true plant, although far less sensitive than this species. The plant is of a branching habit, with a prickly stem; leaves digitately pinnate, each pinnæ bearing many pairs of light green leaflets, which close up and the whole leaf drops by the lightest touch. It is supposed by many to be an annual, and not to be increased by cuttings; these ideas are, however, erroneous, but by far the best plants are obtained from seeds in spring. Native of Brazil.

MORENIA.

A genus of elegant Palms, comprising two or three species only. These are well adapted for the decoration of the dinner table, and for the drawing room, while they also form graceful ornaments in the stove. The soil best adapted for their culture is peat, loam, and sand, in the proportion of two parts of the former to one each of the latter. They should be supplied liberally with water, and grown in the shadiest part of the house. *Morenias* are increased from seeds, which, like all others of this order,

should be sown immediately they are received from their native country, irrespective of the season.

M. corallina.—This is an exceedingly handsome plant, and is admirably adapted for dinner-table or drawing-room decoration. The stem is moderately stout, quite smooth, almost ivory white, and reaches to some twenty feet in height. Leaves pinnate, from two to four feet in length, and beautifully arched; pinnæ broad, sessile at the base, tapering upwards to an acuminate point, from six to twelve inches in length, and of a light green colour. A most beautiful and useful plant, very suitable for small houses. Native of Santa Fe de Bogota.

M. fragrans.—An elegant plant, with a reed-like stem, seldom exceeding two or three feet in height. The leaves are bluntly ovate in outline, pinnatisect, and from one to two feet in length; pinnæ lanceolate, narrow, acute, and dark green; whole plant destitute of spines. Native of Peru.

MUSA.

This genus contains many highly ornamental species and varieties, some of which produce those delicious fruits, the Banana and the Plantain. They appear to be indigenous in all tropical countries, and so much are they esteemed, that great attention is bestowed upon the raising of superior fruit-bearing varieties. Thus in Jamaica, Trinidad, and many other tropical islands, an immense number of varieties are cultivated under local names. The fruits are eaten in a raw state, as well as stewed and fried; in either way they are exceedingly delicate and nutritious. Many of the finest flavoured varieties are tall-growing plants, and can only be accommodated by those possessing large stoves, but the dwarf-growing Chinese species, *M. Cavendishii* (*M. sinensis* as it is sometimes called) can be

easily accommodated, as it seldom exceeds five or six feet in height. These plants all require rich soil, and at the time of fruiting should have a little stimulant applied, if (as is frequently the case) the root space is limited and sustenance deficient. The soil should be made up of about two parts rich loam, and two parts decomposed manure and leaf mould, to which should be added a liberal quantity of clean river sand. Drain well, and water copiously. They are mostly increased by suckers, which are thrown up during the time of fruiting; but some few kinds, such as *M. ensete* and *M. superba*, never produce suckers, and consequently must be increased by seeds. The varieties which yield suckers would appear to have been altered in character by cultivation, since their fruits never contain seeds. *Musas* are well adapted for out-door decoration in the sub-tropical garden, if thoroughly sheltered places be chosen for them, and their broad and handsome leaves give a truly tropical appearance to the garden.

M. Cavendishii.—A dwarf-growing kind, seldom exceeding five or six feet in height. The leaves are oblong, two to three feet in length, and one to two feet wide, deep green. It is a very ornamental plant, and gives a very tropical appearance to the stove, and also the sub-tropical garden. It does not require great heat to bring it to a fruiting state, and on account of its low stature it can be easily accommodated. It is sometimes grown under the name of *M. sinensis*. Native of China.

M. ensete.—This is the most gigantic species of the genus, and although it has such a succulent appearance, it not only stands uninjured in the open air during summer, but actually makes growth if a sheltered place is selected for it. In the open air the leaf stalks appear to grow somewhat shorter, which will be the means of adding

strength to the plant, enabling it the better to support the large leaves. It attains a height of twenty feet or more. The leaves themselves are oblong in shape, about sixteen feet long, and four feet wide, of a beautiful bright green; the mid-rib very stout, and of a deep red colour. This splendid species never produces suckers, so that when it blooms, the flowers should be fertilised, to induce them to seed more freely, as after fruiting the plant dies. It is only in a few places sufficient house room can be given this plant to fully develop itself, but good large plants can be easily accommodated for the decoration of the sub-tropical garden during summer, and it stands the temperature of the conservatory in winter without injury. Native of Abyssinia.

M. sapientum.—A tall-growing kind, reaching some twenty feet or more in height. The leaves are oblong, from eight to ten feet long, and a foot wide, of a deep green colour. There are an immense number of varieties of this species, differing in size and in the quality of the fruits. The best we ever saw was a red-stemmed form from Jamaica, which produced in this country a splendid cluster of fruits weighing upwards of 60 lbs., and of a most delicious flavour.

M. sapientum var. *vittata*.—This is an elegant variety of the preceding species, growing under good cultivation to about the same height. The leaves have a bright green ground, which is beautifully striped and blotched with white. Its fruit is not edible, but the beauty of its variegation fully compensates for that deficiency. It was discovered at some considerable elevation in the Isle of St. Thomas, Western Africa.

M. superba.—A very distinct and handsome plant, but requiring strong heat and a very moist atmosphere to

develope its beauties. In a young state it is not very different in appearance from *M. sapientum* and its varieties, but as its leaves increase in size, the stem becomes swollen towards the base, and the whole plant assumes more the appearance of a grand compact form of *M. ensata*, though from this plant it is abundantly distinct. *M. superba* is a somewhat rare and magnificent plant, but from its size only suitable for those possessing ample room and a large collection. Native of the East Indies.

M. zebrina.—This is a very distinct plant, seldom exceeding ten feet in height, and well deserving a place in stoves where a large collection of ornamental plants are grown. The stem is slender; leaves oblong, dark green, with broad blotches of bronzy red and purple irregularly scattered over them, giving the plant a very picturesque appearance. Native of the East Indies.

NEPENTHES.

This singular and highly ornamental genus is, it would seem, the only one at present known in the order to which it gives its name, and the affinities of which do not seem to be thoroughly understood. "Pitcher Plants," as the *Nepenthes* are popularly called, are highly interesting and curious, never failing to elicit admiration. They seem to be entirely confined to the Old World, and find their homes chiefly in the islands of the Indian Archipelago, where they usually grow at considerable elevations, the mountain of Kina Balou in Borneo appearing to be their head-quarters, for many extraordinary forms of this genus are known to exist there, and which, although known to science, have yet never been brought to this country in a living state. In addition to those in the islands of the Indian Archipelago, two species are also known to exist

in Madagascar, while the Philippine Islands produce one or two species, which, however, are not peculiar to them. One species which grows plentifully in Java is to be found in New Caledonia, and one species is said to be found growing on the Khasia Hills, at an elevation of 3,000 feet, and marks the northern limit of the genus.

Many absurd stories are in circulation, respecting the uses of the curious ascidia, or pitchers, developed at the extremities of the leaves of these plants. The most popular amongst these, describes how the plants are endowed with such extraordinary vitality as to enable them to grow in arid sandy deserts, where nothing else in the shape of vegetation exists; that they have the power of distilling water, and filling their pitchers and closing the lid down when the vessel is full; and that birds, animals of various kinds, and even man is accustomed to resort to them to quench their thirst with the cool and pure water found therein. This is, however, nothing but a pretty fancy—the fact is they grow upon boggy swampy soils, and cannot exist long in an arid atmosphere.

The *Nepenthes* are dioecious plants: that is, the flowers are not perfect, and each sex is produced upon a separate plant, so that, as frequently happens, either one sex only may exist, even in large collections of these plants, or one may only be in flower at the same time. To this must be attributed the non-appearance of garden hybrids until recently, for as the cultivation of these plants has greatly increased of late years, more opportunities have occurred for hybridising and cross-breeding.

Few people have had the pleasure of raising *Nepenthes* from seed, on account of the seed being so short-lived, that if not sent home immediately it is gathered, and sown at once, its vitality is gone. This, in conjunction with the

fact that home-grown seed is very rare, causes it to fall to the lot of but few to accomplish or to engage in this task, but it is fraught with the greatest interest, and gives rise to more hopes and fears than in the case of any other class of plants which we have attempted to raise from seeds. The seeds of the *Nepenthes* appear to be about half an inch in length, and filiform; this, however, is only the outer loose covering, the seed itself being very small, and situated in the centre of this loose tunic, whose office, it would appear, is to float the seed upon the marshy grounds until it germinates and becomes fixed in the earth.

The seed having been obtained, take a properly prepared seed-pan, using for soil a finer mixture of that recommended for the strong plants, filling it to within an inch of the rim, upon which, after watering, sprinkle the seeds; they will not require any covering, but should be enclosed in a bell-glass, or placed in a moist close frame, with a bottom heat of 80° or 85°. In this temperature they should begin to germinate in about a month, and the very first leaf which is made after the seed leaves, is to all appearance like a diminutive *Sarracenia purpurea*, or like a small hollow mid-rib, with fringes or wings on each side. They continue to make a quantity of these leaves, and should, as soon as possible, be transplanted into small pots, when in the course of a few months they develop their normal forms. These plants may also be increased by cuttings, and the well-ripened one-year old wood we consider the best for this purpose. The cuttings should be inserted singly in small pots, and plunged into strong bottom heat until rooted.

Nepenthes thrive admirably, and become very ornamental, if placed in a moist atmosphere, and in a temperature of about 70°, which should be maintained during summer, and

which may be allowed to increase by the influence of the sun many more degrees. In winter 65° should be the minimum, and, of course, less water must be given. The soil best adapted for these plants is good brown fibrous peat and sphagnum moss, about two parts of the former to one of the latter. They are surface-rooting plants, and do not require much depth, consequently they thrive admirably, and display their singular beauties to great advantage, when grown in baskets. Water must be supplied bountifully in the summer, both from the watering-can and the syringe, and even during winter the supply must be larger than for the majority of stove plants.

N. ampullacea.—A robust-growing species, with broad oblong leaves, upon the apex of which are situated its somewhat ovate pitchers; the terminal lid is very small; colour a uniform light green. This plant frequently produces a quantity of suckers from base of the stem, which form quite a nest of pitchers near the ground, giving a very peculiar and interesting appearance. It is a native of Borneo, Sumatra, and Malacca.

N. ampullacea picta.—In every respect resembles the species, saving in the colour of the pitchers, which differ in being light green, streaked and spotted with reddish brown. Native of Borneo.

N. distillatoria.—As far as we are aware, this species is peculiar to the Island of Ceylon. The plant is of free growth, with bright light green leaves and pitchers, the latter being some six or eight inches in length. It forms a fine specimen, and withstands a lower temperature than any other kind we know. Native of Ceylon.

N. distillatoria rubra.—This variety differs from the preceding in having deep blood red pitchers, which render it very distinct and ornamental. It originated in this

country, from a packet of seeds of *N. distillatoria* received from Ceylon.

N. Dominiana.—This is said to be a garden hybrid, and is very handsome and ornamental. It is of robust habit, producing stout, broad, oblong, dark green leaves; the pitchers are several inches long, and deep green in colour.

N. gracilis.—A species which has been considered identical with *N. lœvis*, but however great the resemblance in a dried state, the plants appear distinct when living. Unfortunately we have not been able to compare the living flowers. The stem of the plant now under consideration is slender; the leaves are sessile, and broadly decurrent, forming almost an uninterrupted wing between each leaf; it tapers to a point, and the pitchers are from three to four inches in length, having two rows of ciliate hairs in front, and, together with the leaves, are of a deep shining green. It is a native of Borneo.

N. gracilis major.—This is said to be a variety of the preceding, but we cannot think it bears any relation to that plant; it is very handsome, and well deserves general cultivation. The stem is somewhat slender; leaves broad (not decurrent), and dark green; the pitchers are much larger than in *N. gracilis*, contracted upwards somewhat a little above the centre, winged and furnished with ciliate hairs in front; ground colour dark green, streaked and blotched with reddish brown. Native of Borneo.

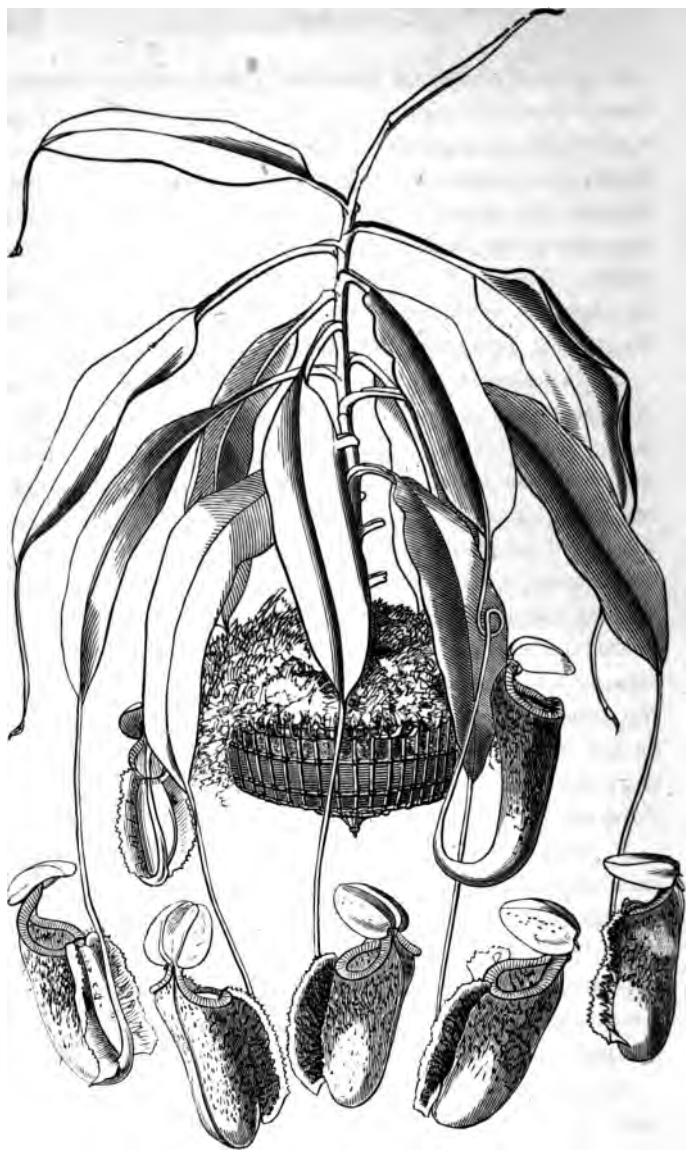
N. hybrida.—Leaves oblong, broad, and deep green. It produces pitchers about eight inches in length, winged and ciliated in front, dark green in colour. It is said to be of garden origin.

N. hybrida maculata.—This is also said to be a garden variety. It resembles the preceding in general appearance, but the pitchers, which are some ten inches long, are

profusely streaked with reddish purple upon a dark green ground. A very handsome plant.

N. Hookeriana.—This is a magnificent species, with large broad oblong leaves, which are thick and leathery in texture, dark green on the upper side, paler below. The pitchers in the young plants are broadest at the base, measuring some four inches in length, and two inches in diameter; the edge of the mouth is rolled inwards, and ornamented with an annular disc; lid much smaller than the mouth. The front is ornamented with broad wings, which are ciliate at the edges. As the plants increase in height and age, the pitchers assume a totally different shape, they become narrow at the base, and lose the broad wings which ornament them in a young state; the portion of the mid-rib which supports them, is attached to the base of the pitcher, in front when young, but in the second state it is completely reversed, and its attachment is behind. What is the cause of this we cannot say, the change is, however, not sudden. We have had plants with pitchers of both forms upon them at the same time, and also pitchers exactly intermediate, and these intermediate ones always between the extreme forms. The pitchers in both stages are dark green, profusely streaked and blotched with dark red, rendering it very attractive and interesting. Native of Sarawak.

N. laevis.—A very elegant small-growing plant, very much resembling the previously named *N. gracilis*. It is, however, more robust in habit; its leaves are not decurrent as in that species, but merely sessile, they are not so long, and are more obtuse; the leaves are dark green above, paler below; pitchers about three inches long, and somewhat lighter coloured than the leaves. Native of Borneo.



NEPENTHES RAFFLESIANA,

Borneo, &c.

N. phyllamphora.—A species of free growth, and somewhat robust habit, producing large broad oblong leaves, of a bright apple green. The pitchers are of the same colour, and measure from five to ten inches in length, not winged, but furnished with a few hairs in front. It is very handsome, and is the most abundant kind in cultivation. Native of the Labuan Mountains in Borneo, at an elevation of 2,500 feet; it also occurs in Malacca, Singapore, Java, and New Guinea.

N. Rafflesiana.—The present species somewhat resembles *N. Hookeriana* in habit. The plant is very robust; the leaves large, oblong, thick and leathery in texture, dark green on the upper surface, paler below. The pitchers are from six to twelve inches in length, the lid large, margin of the mouth rolled inwards, and ornamented with an annular disc; the colour is dark green, beautifully spotted and blotched with red. The pitchers are winged in front, when produced upon leaves near the base of the stem or upon young laterals, but afterwards they undergo the same changes as those of *N. Hookeriana*. It is found on the mountain of Kina Balou, in Borneo, at 3,500 feet elevation, and upon the mountain of Labuan; also in Sumatra, Singapore, and Malacca.

N. sanguinea.—This is an extremely rare plant in cultivation, and, as far as we are aware, it is far from common in its native habitat, or at least it has rarely been found by plant collectors. The leaves are dark green, but the pitchers are its chief attraction, being from five to ten inches in length, and of a deep blood red colour. It is a native of Java?

N. villosa.—This is a rare plant in cultivation, of robust habit, producing broad somewhat spatulate leaves of a dark ferrugineous green. The pitchers are from ten to

twelve inches long, dull green, faintly blotched with reddish brown, winged in front, the wings deeply lacerated at the edges. The annular disc of the mouth is very broad, and reddish pink in colour. Lid small, rusty green, blotched with reddish brown. It is found growing in swampy places on the mountain of Kina Balou, Borneo, at 8,000 and 9,000 feet altitude.

CENOCARPUS.

A group of Palms entirely confined to South America, and which seem to be very nearly related to the genus *Euterpe*, from which, however, they differ considerably in the arrangement and construction of their flowers. The species of *Cenocarpus* have, when mature, straight and lofty stems, with long, very much plaited, pinnate leaves, and they have a peculiarly stiff flower spike, which springs from beneath the leaves, and is encased in double woody spathes, the inner one in the immature state entirely covering it, but which eventually falls away. The flowers are unisexual, but both sexes are produced on the same spike. The fruits are oval, usually purplish black, and one-seeded. They should be grown in peat and loam in equal parts, and require stove temperature.

C. Bataua.—This is an elegant Palm, having a naked stem, and pinnate dark green leaves, about fifteen inches in length, which, however, are not produced in great abundance, thus giving the crown of leaves a somewhat thin appearance. It is a native of South America.

C. minor.—Stem attaining a height of about twenty feet. The leaves are pinnate, from six to eight feet in length, and handsomely arched; pinnæ dark green on the upper side, clothed on the under with a short white to-

mentum. It is a very pretty plant for the stove. Native of woods on the Rio Negro, South America.

ONCOSPERMA.

The plants comprising this genus are nearly allied to *Acanthophœnix*, and through this to *Areca*; they possess several distinctions, however, of a botanical character, and in addition make offshoots, thus forming tufts or dense masses of shoots from the base, this habit itself proving its distinctiveness from *Acanthophœnix*, which rises erect upon a single stem. *Oncosperma* includes some very elegant plants, which are admirably adapted for the decoration of the stove and for public exhibition, and when used as ornaments for the dinner table are exceedingly beautiful, but they are not sufficiently hardy to thrive well out of the atmosphere of the warm stove. They are found in the islands of the Indian Archipelago, and under cultivation luxuriate in a copious supply of water, and may even be stood in a tank of water with considerable advantage. These plants should be potted in two parts peat, one part loam, and one part river or silver sand. They may be increased by seeds or by suckers.

O. fasciculata.—An exceedingly beautiful plant for stove decoration. The leaves are pinnate, and dark green, pinnæ long and somewhat pendent; the petioles are sheathing, and clothed with slender black spines. Native of Java, &c.

O. Van Houtteana.—This is a very elegant species, sometimes to be found in collections under the names of *Areca nobilis* and *A. rubra vera*, from which genus, however, it can readily be distinguished by its spiny petioles, all true *Areca*s being totally unarmed. The petioles of this plant are deep brick red, and profusely clothed with

long black spines. The leaves are pinnate, gracefully arched, and the pendent pinnæ are of a rich full green on both surfaces. Native of Java, &c.

OREODOXA.

A noble genus of Palms, remarkable on account of their much swollen stems. It includes some very graceful plants, some of which are upwards of one hundred feet in height. The leaves are long, pinnate, the petioles broadly clasping the stem ; the flower spikes are enclosed in double spathes, which are woody in texture, and the flowers unisexual, clothed with little bracts at their base. *O. oleracea* is the species called in the West Indies the Cabbage Palm, from the fact that a delicious vegetable is afforded by the compressed young leaves, but as this can only be obtained at the cost of the plant's life, the return is very inadequate. Pot in loam with a little peat and sand. They will form beautiful ornaments in the sub-tropical garden, and also for the decoration of apartments, but out-doors require to be sheltered from wind. Increased by seeds.

O. oleracea.—Stem slender, swollen at the base, dark green, freckled with blackish brown, but clothed for some time with the persistent petioles, which are brown ; leaves pinnate, four to six feet in length, and beautifully arched ; pinnæ one to two feet in length, and bright dark green. A most elegant plant. From the stem of this a farinaceous substance is obtained resembling sago. Native of the West Indies.

O. regia.—This is a slender-growing and graceful species. The leaves are pinnate, from three to six feet in length ; pinnæ six to twelve inches in length, and less than

one inch in breadth, the colour bright green on both sides. Native of Cuba.

O. ventricosa.—As its name implies, the stem of this species is very much swollen at the base, with a narrow neck, and clothed with the broad pale brown persistent sheaths. The leaves are pinnate, six feet or more long, beautifully arched, the petioles glaucous, the pinnæ eighteen to twenty-four inches in length, and one to one and a half inches in width, and bright green. Like the preceding species, this is wholly destitute of spines. Native of South America.

OREOPANAX.

A genus of *Araliaceæ*, the species included in which are by many authorities retained in *Aralia*. They are very ornamental plants, forming splendid specimens for the decoration of the greenhouse or conservatory; they are also very effective in the open air during summer, when sufficiently large. The species of *Oreopanax*, like those of *Aralia*, should be grown in sandy loam, to which may be added some peat and leaf mould. They may be increased by cuttings or eyes.

O. dactylifolium.—An elegant erect-growing plant, with palmate leaves, usually having about seven lobes, which are divided deeply down, and measure from six to eighteen inches in diameter. The, stem, petioles, and under side of the leaf are clothed with a rusty tomentum; the upper side is smooth and deep green. It should be in every collection of greenhouse plants. Native of Mexico.

O. platanifolia.—This is another cool-house species, and is a superb plant for general decorative purposes. The leaves are from six to eighteen inches or even more in diameter, having from five to seven lobes, dark green on

the upper side, paler below ; the base of the petioles is swollen, and clothed with a ferrugineous tomentum. Native of the mountains of Peru.

OUVIRANDRA.

This is a small genus belonging to the order *Juncaginaceæ*. It consists of aquatic plants, which grow beneath and not upon the surface of the water, yet as it is for the beauty and singularity of the foliage that the species are grown, it would not be politic to ignore them in these pages. The natives say the roots grow to a considerable size, and are an article of considerable importance to them, as at certain seasons they collect the roots, and use them for food after their being cooked, hence it is called by them the Water Yam. How far this may be correct we cannot assert, but plants which have attained a very large size with us, have never increased much in the size of their roots. In their native country the *Ouvirandras* grow near the margins of running streams, but we have grown them in large inverted bell-glasses and tubs, cleansing and agitating the water by running in daily, with a rose-headed watering pot, some fresh water at the proper temperature. They seem to luxuriate in a mixture of loam and decayed vegetable matter, in about equal parts, but as the water will make the soil too light for the roots to cling to if left to itself, some large pieces of stones or tiles must be laid upon the surface to keep it firm. Various opinions have been expressed as to the depth of water required, but we have always succeeded best with it when the floating leaves have been covered by about two inches of water. The depth at which the crown is placed must be regulated by the size of the plant ; if it be a small plant, very little depth will be

required, but if (as we have had this plant) it be furnished with from eighty to a hundred leaves, each measuring a foot in the blade, and some three or four inches broad, a considerable quantity of water will be necessary to cover it, and the safest guide is to have the highest part covered with some two or three inches of water. The temperature of the water should be about 70° or 75° Fahrenheit, and the plant may be grown to a considerable size in a large inverted bell-glass or an aquarium. When raised to about the level of the eye it is seen to the greatest advantage, and as it enjoys full exposure to the light, such a position has no injurious effect upon it. The plant enjoys frequent mulchings with water, in which some fresh mould has been stirred, and although this necessitates a thorough cleaning of the leaves when the water again becomes settled down, the trouble is amply repaid by the increased vigour of the plant. It has been the practice of most people who have grown this plant to use some white material on the surface of the soil, so that the dark green lattice-like leaves may be seen to the greatest advantage. This, when one is looking down upon the plant, shows off the leaves beautifully. Such materials as broken Derbyshire spas, broken oyster shells, silver sand, white China plates, white glazed tiles, and various other things have been used for this purpose, but we consider them all bad, there being something in the manner in which the light acts upon these substances, which from experience we find injurious to the plants; and if they are grown in aquariums, and stood so as to come into the line of vision, nothing of the sort will be necessary, while in no other position do they display their beauties in an equal degree. The only disease (if disease it may be called) to which we have found the *Ouvirandras* liable, is that they become

clothed with a green confervoid growth, which if neglected speedily kills the leaves, and soon robs the whole plant of its beauty, and ultimately of its life. This we have found can be eradicated in a few days by tying a thick cloth over the vessel in which the plant is growing, so as to envelope it in perfect darkness. When uncovered the soil should be renewed, and if any dead leaves are upon the plant, they should be carefully removed.

O. Bernieriana.—This species resembles *O. fenestralis* in general structure, the leaves, however, being much narrower and longer, and the nerves much closer, so that it does not present such a striking net-like appearance. The flower stem in this species is divided into four spikes at the apex, and the flowers are of a pale rose colour. The stems are much inflated about the middle, which is probably a provision of nature to uphold them, for as this plant is more erect in its growth than the preceding, it will probably grow naturally in deeper water, although the two species are sometimes found intermixed in a state of nature. It, like *O. fenestralis*, is a native of Madagascar.

O. fenestralis.—This is popularly known as the Lace-leaf, or the Lattice-leaf, and is one of the most singular plants in existence. The leaves are from six to eighteen inches in length, and from two to four inches in breadth, oblong, with an obtuse apex, and spreading out horizontally beneath the surface of the water. They are of a dark green colour, and consist of a strong mid-rib, and what would be called the primary nerves of an ordinary leaf, and thus present the appearance of a beautiful piece of network, or of a skeletonised leaf—indeed, it is a veritable living skeleton. The flowers are inconspicuous; they rise from between the leaves upon a scape, which at the apex be-

comes forked, or split into two spikes, upon which the greenish white flowers are situated. If these are fertilised and the seeds allowed to fall into the water, they find their way to the soil and germinate freely in a short time. This most extraordinary production of nature is a native of Madagascar.

PANDANUS.

The plants comprising this genus are familiarly known as Screw Pines, from the very peculiar spiral arrangement of their leaves. They usually inhabit the muddy banks of rivers and marshy places, and are found principally in the Indian and African Islands, some few extending to Australia, but as far as we are aware none have hitherto been found in the Western Hemisphere. In a state of nature Pandanads grow to a great size, reaching twenty or thirty feet in height, and becoming much branched; in this form they present a peculiar appearance, from the stem being elevated above the soil upon a cone of roots, which adventitious roots are produced at intervals from the stem, and are protected at the points by a covering of thick scales, until they reach the ground. These plants form conspicuous objects in a stove, especially in positions from which they have not to be often removed, for then their long leaves do not get broken; another great objection to moving *Pandanus*, when they get large, is that their very spiny leaves commit such havoc amongst the leaves of neighbouring plants. In a young state many of the species of *Pandanus* are admirably adapted for window plants and for table decoration. The soil for their successful cultivation is sandy loam, and the drainage should be good, as they enjoy a copious supply of water. They are increased by cuttings, suckers, and seeds.

P. candelabrum.—This plant, we are told by travellers in Western Africa, forms a magnificent branching tree attaining a height of thirty feet or even more, and sending down large roots, which look like stems, and secure them in their positions, which—from the increasing spread of the branches, and the force of the streams near or in which they grow—would, without these supports, be much endangered. The leaves are three feet in length, and about two inches in breadth, dark green, and armed at the edges with brown spines. This plant is frequently sent home from the West Indian Islands, and thought to be indigenous there, but as far as we are aware it is only found in a wild state in Western Africa.

P. elegantissimus.—An elegant plant, and one that is admirably adapted for table decoration or public exhibition. The leaves are ascending, from two to three feet in length, glaucous at the base, dark green on the upper side, paler below, and armed at the margins and back of the mid-rib with deep red spines. In general appearance this plant resembles *P. utilis*, but is better adapted for those with limited accommodation, as it is less robust in habit. Native of the Mauritius.

P. javanicus variegatus.—Leaves narrow, from three to six or more feet long, slightly pendulous, armed with white spines on the edges, and reversed ones at the back of the mid-rib. The ground colour is bright green, upon which are bands of pure white, extending from base to apex. A plant of great beauty, and the fact of its being so extensively cultivated proves its great popularity. Native of Java, &c.

P. ornatus.—A noble-growing species, attaining a height of several feet in its native country. The leaves are broad, ascending, from three to six feet or even more in

length, of a dark shining green above, lighter or somewhat glaucous beneath, armed at the margins and the back of the mid-rib with short white spines. It is a very handsome and ornamental plant. Native of the Philippines.

P. reflexus.—This is one of the handsomest of the whole genus. The leaves are pendulous or bent back, from four to six feet long, dark shining green, armed with long white spines on the edges, and reversed ones on the under side of the mid-rib. Native of the East Indies.

P. utilis.—Leaves broad, from three to six or eight feet in length, tapering to a long point, glaucous green, saving at the margins, where they are dark red, and, as well as the back of the mid-rib, armed with dark red spines; the base of the leaves is also a dark red. In a young state the leaves are slightly pendulous, and then they are invaluable as window plants, and for dinner-table decoration. Native of Bourbon.

P. Vandermeerschii.—A very handsome and graceful plant. The leaves are narrow, ascending in a young state, ultimately becoming pendulous, dark green, glaucous at the base, the margins and back of the mid-rib armed with long dark crimson spines. Native of and peculiar to Round Island, a dependency of the Mauritius.

P. Veitchii.—This very beautiful plant is known to us only in a young state, but from all we have seen we consider it one of the very best. The leaves are broad, somewhat pendulous, spiny as in the other species, of a dark shining green in the centre, and bordered with broad bands of pure white. It is a native of the South Sea Islands, and was one of the introductions of the late Mr. John Gould Veitch, whose early loss is much to be regretted.

PAPYRUS.

A genus of *Cyperaceæ*, introduced here upon account of its graceful panicles of drooping feathery heads of foliage and inflorescence. It is the Egyptian *Papyrus* or Paper Plant, the pith of *P. antiquorum* having yielded the material for the greatest portion of the paper used by the ancients. The plant is usually considered an aquatic, but it may be grown in the stove if kept constantly standing in a pan of water, and it also makes a splendid group in the sub-tropical garden, producing an effect which is yielded by no other plant. Increased by seeds, and by division of the rhizome.

P. antiquorum.—This is a tall-growing plant, with dark green, angular, jointless stems, supporting at the top an umbel of pendent leaves, which give it a graceful and striking appearance in the stove. It can be made to form a splendid object in the sub-tropical garden, if it is kept somewhat cool during winter, and gradually inured to cold treatment in spring. Native of Egypt.

PAVETTA.

A genus nearly allied to *Ixora*, and containing several species, one only, as far as we are aware, being worthy of cultivation for the beauty of its foliage. The soil best adapted for its growth is loam and peat, in equal parts, with plenty of sand. It should be well drained, and liberally supplied with water. It delights in strong heat, and almost full exposure to the sun, for if much shaded the markings of the leaves—which constitute its chief beauty—are not so bright and well defined. To increase it, insert cuttings in strong heat in spring.

P. borbonica.—This beautiful plant deserves a place in

every collection, as it will stand exposure well; it is a splendid object for the decoration of the corridor, or as a window plant in summer time. It frequently grows erect with but a single stem, and in this state, when small, it is very ornamental for decorating the dinner table, but if a bushy plant is required, it must be stopped occasionally to induce lateral growths. The leaves are opposite, oblong-lanceolate, from six to ten inches long. The ground colour is dark olive green, upon which are white spots, thickly studded over the whole surface, and these are shaded with a very light green, whilst the mid-rib is bright salmon red; these colours are rendered more intense by full exposure to the sun's light. Native of the Isle of Bourbon.

PEPEROMIA.

A genus which until lately has been very much neglected. Since, however, public taste has so much improved, and the beautiful markings of leaves, as well as flowers, can make an impression upon our better feelings, many plants have been introduced to our gardens, and highly appreciated there, which a few years ago would have found no abiding place. Amongst such are several species of the family now under consideration. The interest attached to this order (*Piperaceæ*) in an economic and commercial point of view is very great, but that we shall pass over, and devote our remarks to it in a horticultural point of view only. The species and varieties of *Peperomia* here given are easily grown, and they are elegant plants, which may be brought from the stove and placed in vases, for the temporary decoration of the sitting room, as their stout succulent leaves enable them to successfully withstand the change from a moist to a dry atmosphere. They should be grown in good fibrous peat and loam, adding some silver sand,

and must be kept in rather small pots, giving a liberal supply of water during summer, but less in winter, though they must not be kept quite dry at any season. They are increased by cuttings, and by seed when it can be obtained; from the latter fresh forms of variegation may be looked for, and this is a point well deserving the attention of the amateur cultivator.

P. arifolia argyræa.—Another very handsome plant, and one which, on account of its compact habit, can be grown in the most limited collection, as it seldom exceeds eight or ten inches in height. The footstalks, which are deep red, support its handsome orbicular or ovate leaves, which, when well grown, measure about five inches in length; they are thick and fleshy in texture, the colour along the veins is bright green, the interstices being a metallic white. A perfect little gem for any situation where a small plant can be used. Native of Brazil.

P. maculosa.—This species is well adapted for the adornment of the sitting room, on account of the great substance of its leaves, which are very fleshy, ovate-lanceolate in shape, and of a bright shining green colour, the footstalks being beautifully spotted with purple. Native of the West Indies.

P. marmorata.—This little gem is one of the introductions of the Horticultural Society, and merits a place in every stove. It is very dwarf and compact in habit. The leaves are thick and fleshy in texture, somewhat ovate, tapering to a point, the ground colour a rich bright green, beautifully variegated with white. It is admirably adapted for the decoration of the dinner table or sitting room. This plant was for some time grown under the name of *P. arifolia*, which belongs to a different species. Native of Brazil.

PHILODENDRON.

An exceedingly handsome genus of *Araceæ*, which mostly scramble over the forest trees in tropical countries; many species are fine ornaments to our stoves, and some few will thrive in a greenhouse, whilst others, upon account of their coriaceous leaves, form splendid objects in the sub-tropical garden during summer. They should be grown in a compost consisting of peat and loam in equal parts, adding a little sand, and during summer liberally supplied with water. Increase is effected by seeds and by division of the roots.

P. cannaefolium.—This is a dense compact-growing plant of considerable beauty, though scarcely to be specially recommended for a collection containing but few species, as there are so many of this order well deserving cultivation. The footstalks are very stout, and look as though inflated, and are about twelve inches in length. The leaves are about the same length, ovate-lanceolate, and of a deep shining green colour. It is a very distinct plant, and one which would be of great beauty in the sub-tropical garden, if it is sufficiently hardy to stand exposure. Native of Brazil.

P. erubescens.—This fine species is very useful for covering pillars, or a back wall in the stove. The leaves are borne upon short footstalks; they are heart-shaped, and from six to twelve inches in length, bronzy red in a young state, changing with age to deep shining green; the terminal point is enclosed in a large sheathing bract of a bright red colour, which adds materially to its ornamental appearance. Native of Tropical America.

P. laceratum.—A fine climbing species, of robust habit, and producing leaves from ten to eighteen inches in length,

deeply lobed or lacerated at the margins, and bright shining green on the upper side, paler below. It is a native of Venezuela.

P. pertusum.—This fine plant is frequently met with under the name of *Monstera deliciosa*. It makes a splendid ornamental plant in the stove, and will even thrive all the year round in a greenhouse, but it does not look quite happy in winter in such a low temperature; in summer, however, it succeeds admirably in the open air. The leaves are broad and perforated, dark shining green, supported upon long petioles. It enjoys an abundant supply of water. Native of the West Indies.

P. pinnatifidum.—A plant resembling the preceding somewhat; the leaves are rich dark green in colour, but are pinnatifid, the broad lobes being sessile. It is a fine ornament in the stove, and, like *P. pertusum*, is extremely beautiful in the open air during the summer months. Native of the West Indies.

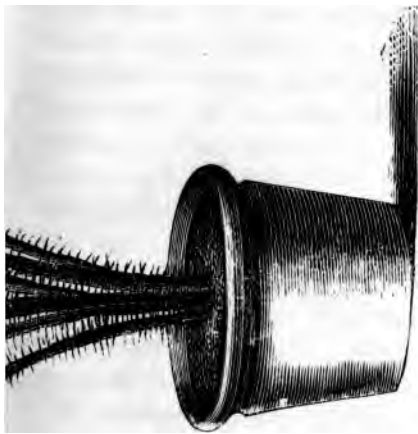
P. Simsii.—The present species is a noble plant for growing above or partially in a stove aquarium, or, indeed, in any place where large massive foliage is required. The leaves are cordate at the base, tapering to a point, some two or three feet in length, and about two feet in breadth, stout in texture, and rich bright green on the upper surface, paler below. It is a superb plant for the sub-tropical garden during the summer months, but it must be well shaded with the surrounding trees or shrubs. Native of Caraccas.

PHENICOPHORUM.

The plant upon which this genus was founded, was discovered by Mr. Duncan, Director of the Botanic Gardens at the Mauritius, and being perfectly new, was dedicated by him to — Stevenson, Esq., the then Governor

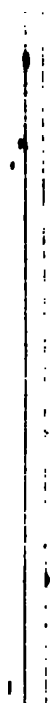






PHENICOPHORUM SEHELLARUM.

Seychelles Islands.



of the Island of Mauritius and its dependencies. It was cultivated in our gardens for several years under the name of *Stevensonia grandifolia*, but as the name had never been published, it was open to any one to give it another name when publishing a description of it; and this has led to *Phœnicophorium* (which signifies Thief Palm or Stolen Palm) being the accepted name of the plant, which has been applied to it through circumstances which happened to the first plants introduced, but which need not be related in this place. The soil best adapted for the culture of this genus is a mixture composed of two parts rough peat, one part loam, and a little sand; the pots should have a quantity of drainage material placed in them, as the plants enjoy frequent waterings, and the soil should be made only moderately firm, as we have found by experience that these plants do not thrive so well when hard potted. They enjoy a high temperature and moist atmosphere, and are increased only by seeds.

P. sechellarum.—This is perhaps one of the most noble Palms ever introduced to cultivation. We are unable to say the height it attains in its native habitats, and must therefore confine ourselves to the appearance it puts on in our gardens. The stem is stout, and the leaves are plaited, entire, from one to eight feet in length, and from one to four feet in breadth, bifid at the apex, and fringed round the margins by being cut into acuminate segments, which are edged with red; the petioles are broad and sheathing, and densely armed with formidable black spines between three and four inches in length; the blade is perfectly unarmed, deep green, spotted with dull orange. It is known in some continental gardens by the name of *Astrocaryum aureo pictum*. Native of the Seychelles Islands.

PHŒNIX.

This genus of Palms is very interesting and extremely useful, *P. dactylifera* being the plant from whence the Dates of our shops are obtained, and though used but to a small extent by us, these form an all-important crop to the tribes who cultivate the Date Palm. The plants comprising this genus vary much in habit, for whilst some are almost destitute of stem, others attain considerable height, their crown of long pinnate leaves being supported upon stout trunks. The flower spikes are produced from amongst the leaves, and not below them, male and female flowers being produced on separate plants. The fruits are ovate, fleshy, and one-seeded. The seeds of *Phœnix* can be easily distinguished from all other Palms, by the deep groove extending down the back. To grow these plants quickly, use loam and peat in equal parts for potting them in, and give an abundance of heat and moisture, but if the plants have attained to a size sufficiently large for the accommodation at command, pot them in loam and sand, and keep them in the greenhouse. Nearly all the species are well adapted for the decoration of apartments, or for the sub-tropical garden in summer, and in the young state they form elegant objects upon the dinner table. Seeds afford the best and readiest means of increasing them, but suckers are also frequently to be obtained before the base of the stem is formed.

P. acaulis.—Stem very low, or entirely wanting; leaves one to three feet or more long, pinnate, spreading; the pinnæ narrow, and swollen at the base, dark green, the lower ones being reduced to broad flat spines. An ornamental species suitable for any decorative purposes, and

being a small-growing plant, it is valuable to those cultivators with limited accommodation. Native of Sikkim.

P. dactylifera.—This, the Date Palm, is an erect handsome plant, with long pinnate dark green leaves; the pinnæ are linear-lanceolate, and stand out quite straight. It is a superb plant for the decoration of apartments when young, and for the sub-tropical garden when large. It succeeds either in the greenhouse or stove. Native of Northern Africa and Tropical Asia.

P. farinifera.—This is an elegant and compact-growing species. The leaves are pinnate, three to four feet in length; pinnæ ovate-acuminate, about six inches in length, and ending in a sharp spine, the lower ones reduced to spines; whole plant glaucous. It is well adapted for greenhouse decoration, and also for the sub-tropical garden during summer. Native of East Indies.

P. reclinata.—A very fine large-growing species. The stem becomes stout with age; leaves pinnate; pinnæ linear, somewhat triangular and spreading. It is a fine greenhouse Palm, and stands uninjured in the sub-tropical garden during summer. Native of South Africa.

P. sylvestris.—This is sometimes called the Wild Date. It resembles *P. dactylifera* somewhat, but is more lax in its growth; the leaves are more spreading, and the pinnæ are longer and not so wide. It is one of the hardiest Palms, suitable for greenhouse decoration, and is invaluable for out-door decoration in summer. This is a common plant throughout the East Indies.

P. tenuis.—This is the most elegant species, as a young plant, and it is of too recent introduction to our gardens to speak of it in any other way. Resembling *P. dactylifera* in general appearance, it is, however, more slender and finer in all its parts; it will prove a valuable addition

for the decoration of apartments and the dinner table, as well as for the beautifying of the plant stove. Native of the East Indies?

PHORMIUM.

A genus of highly ornamental plants, belonging to the natural order *Liliaceæ*. The species longest known, and upon which the genus was founded—*P. tenax*, commonly called New Zealand Flax—produces a most excellent fibre, and it is a matter of regret that the cultivation of this plant has not been largely carried on, as the plant is of easy quick growth, and the fibre it yields possesses every good quality. But leaving their economic qualities, we turn to their points of interest to the horticulturist, as it is in this light, we doubt not, that most of our readers will view them; and as decorative plants they certainly take first rank. *P. tenax* is almost hardy; indeed, in Ireland we have frequently seen magnificent masses of this species, which have stood quite unscathed the rigours of an Irish winter. Whether the variegated kinds will prove equally hardy we cannot say, but we do not think it probable; still they will always be most valuable for the decoration of the greenhouse and conservatory, for halls and sitting rooms, for window ornamentation, and to lend an additional charm to the sub-tropical garden. They should be potted in good rich loam, with the addition of a very small portion of peat and some river sand. To increase them, divide the plants in spring, and keep a little close until fresh roots appear.

P. Colensoi variegata.—This very elegant species produces long narrow lanceolate coriaceous dark green leaves, which are margined with a beautiful white border. It is very graceful in habit, and is worthy a place in every collection of greenhouse plants. Native of New Zealand.

P. tenax.—Leaves from four to upwards of six feet in length, rigid, erect, and dark green, with a narrow reddish brown margin. It is a noble-growing species, well adapted for the decoration of the greenhouse and the sub-tropical garden. Native of New Zealand.

P. tenax variegatum.—This plant forms one of the most attractive objects in a conservatory or greenhouse. It is equally as robust as the preceding. Leaves dark green, broadly striped with rich yellow and white. Native of New Zealand.

PHYLLOGATHIS.

A genus of *Melastomaceæ*, which, as far as we are aware, has but one species to represent it in cultivation, and that being a native of Sumatra, and probably several other islands of the Malayan Archipelago, requires a very moist and warm atmosphere. It requires to be potted in rough peat and sand, to which may be added a little leaf mould. It is increased by leaf-cuttings, and should be grown in a close frame in the stove, or under a hand-glass until it is well established.

P. rotundifolia.—A handsome plant, with a square stout stem, seldom rising more than a foot in height. The leaves are opposite and sub-rotund, from six to nine inches long, and from four to six wide, the upper surface plaited and shining, of a rich deep metallic green, slightly tinged with red, the under side dark red, with very prominent ribs. The flowers are borne in a terminal head, and are dark purple, but are of no interest in an ornamental point of view. It should be grown in all choice collections of ornamental-leaved stove plants. Native of Sumatra.

PHYTELEPHAS.

In general appearance these plants resemble the Palms, with which they are now classed, although they were formerly considered to be distinct from that order. The species here given is commonly known as the Ivory-nut Palm, and it is from the fruits of this plant that the vegetable ivory toys, and various other articles now so common in our shops, are made, and as these are so exceedingly cheap, vast numbers must be annually imported. The substance yielded by the fruits of *P. macrocarpa* is whiter than animal ivory, and becomes quite as hard, and it has become an article of great importance to the turner and carver for the construction of small ornaments. This plant is said to grow in vast groves, excluding almost every other tree, and even low herbs are said not to grow beneath its shade. It appears never to attain any great height, but forms a creeping decumbent stem; nevertheless it forms a beautiful ornament to our stoves, and in favourable summers we have seen this plant thriving beautifully in the open air, where it presents a grand appearance. The soil best adapted for it is one half rich loam, the remaining portion peat and river sand, in equal parts. It enjoys a liberal supply of water, and therefore must be drained well, so that none may become stagnant about it.

P. macrocarpa.—The large-fruited Ivory-nut plant. In its native country this plant is said to trail along the ground for some ten or twenty feet, seldom rising above six feet from the ground. Under cultivation it is many years before it commences to trail, but it forms a beautiful and graceful plant, with large, erect, and beautifully arched, pinnate, rich dark green fronds; the pinnæ are very long,

and altogether it is a magnificent and highly ornamental object, independent of the interest attached to it as an economic plant. It is found in damp confined valleys, on river banks, &c., on the South American continent, from the coast region up to nearly 3,000 feet elevation.

PINANGA.

A small genus of low-growing slender-stemmed Palms, usually regarded as a section or sub-genus of *Seaforthia*. The flower spikes are mostly simple; the flowers are usually disposed in straight lines, and the albumen of the seed is beautifully netted with dark lines. They are elegant-growing plants, admirably adapted in the young state for table decoration, but require to be grown in stove temperature, and treated to an abundant supply of water—indeed, they may be stood in pans of water, or a tank if convenient, with great advantage. Pot in a compost of one part loam, two parts peat, and a little sand. Increased by seeds.

P. maculata.—This beautiful and rare species forms a slender smooth stem; it has pinnate leaves, the pinnæ of which are broad, sessile, and pendent; they are bright green, blotched and spotted on the upper side with dark olive green, which gives them a unique and pleasing appearance. Native of the Philippine Islands.

P. Smithii.—A most beautiful species, which will probably prove to be well adapted for the decoration of the greenhouse. The plant is quite smooth; stem slender; leaves pinnate, four to six feet in length, or even more; pinnæ twelve to eighteen inches in length, and from one to one and a half inches in breadth, tapering to a fine point, bright light green above, silvery grey beneath. Native of Queensland.

PLECTOCOMIA.

A genus of Indian Palms, which, although ascending in habit, like the *Calami*, produce much stouter stems. The leaves are pinnate, and furnished at the extremities with long whip-like tails, which are armed upon the under side with large, stout, and very strong compound claw-like spines, resembling a hand, or more nearly perhaps the foot of the mole (*Talpa europea*). The flowers are borne upon long branches, which are produced from the axils of the leaves; the spathes are in two rows, and overlapping, and each encloses its own spike of bloom; the sexes are produced separately and upon distinct plants. The fruits are round, clothed with rough overlapping scales, and are one-seeded. *Plectocomias* are very handsome as young plants, and are well deserving general cultivation. They are easily grown, and as they frequently produce suckers, a succession of young plants can be maintained to replace the older ones when too large. They should be potted in rich loam and peat, in about equal parts.

P. assamica.—An elegant robust-growing plant, with gracefully arched leaves, which in a young state are broad and deeply bifid, but ultimately become pinnate; the upper side is deep green, and the under side a beautiful powdery white. Native of Assam.

P. elongata.—This is a species of great beauty. In a young state the leaves are broad, deeply bifid, and dark green, these eventually become pinnate; the petioles are clothed with long sharp spines. Native of the East Indies.

PRITCHARDIA.

A small genus of Palms, with flabellate plaited leaves and unarmed stems. They are splendid ornaments to the stove,

but will in all probability be too tender for conservatory or greenhouse decoration. These plants should be grown in two parts peat and one part loam and sand, and liberally supplied with water. They are increased by seeds only.

P. Martii.—This is a species of recent introduction, and one which bids fair to form a handsome stove specimen, but it will undoubtedly always require stove temperature. The leaves are flabelliform, plaited, and dark green, supported upon smooth unarmed petioles, which are enclosed at the base in a few rough brown fibres. The seeds of this species are small, and it is totally distinct from *P. pacifica*, although many cultivators have treated them as the same species. Native of the South Sea Islands.

P. pacifica.—A species which will probably prove of more robust growth than the preceding. The petioles are clothed with a white scaly tomentum, flat above, rounded below, enclosed at the base in a few coarse brown fibres, and totally unarmed. The leaves are large, flabellate, plaited, and of a rich dark green. This is a most superb plant for stove decoration; its seeds are much larger than those of *P. Martii*. Native of the Pacific Islands.

PTYCHOSPERMA.

The members of this exceedingly handsome genus of Palms, which is closely allied to *Seaforthia*, have all somewhat slender stems, varying from ten to eighty feet in height. They are all smooth, and quite unarmed. The leaves are pinnate. The flower spikes are produced from below the leaves, enclosed in spathes, which, when at their full size, sometimes burst with a considerable report; the flowers unisexual, but produced upon the same spike, the upper branches bearing male flowers only, in pairs, while on the lower branches a female flower is seated

between the two males. Fruit small, one-seeded. The soil best adapted for their cultivation is a compost composed of loam, peat, and sand, in about equal parts; drain the pots well, and give an abundant supply of water.

P. Alexandra.—This is an extremely elegant somewhat slender-stemmed species. The whole plant is smooth; the leaves pinnate, and beautifully arched, light green when mature, but in a young state quite red. At present this is rare in cultivation, but it will become a very popular plant on account of its being so eminently adapted for dinner-table and drawing-room decoration; it also forms a beautiful ornament in the greenhouse. Native of Australia, and probably Lord Howe's Island also.

P. Cunninghamii, see *Seaforthia elegans*.

P. rupicola.—This is a very handsome plant, and forms a beautiful object on the dinner table, or in a jardinette, as well as in the stove. The petioles are unarmed and sheathing; leaves pinnate, or divided into broad segments, which are some twelve inches in length, and four in breadth; leaf stalks and leaves deep crimson when young, changing with age to dark green. Native of Ceylon.

PUYA.

A genus of Bromeliads, containing many coarse-growing plants which are not admissible in select groups of ornamental-foliage. The species introduced here, however, is very handsome, although somewhat large. It should be potted in sandy loam and peat, and kept in the greenhouse; increase is effected by suckers, and by seeds when obtainable.

P. coarctata.—A very ornamental vase-like plant. Leaves

from three to four feet long, broad at the base, tapering up to the point, recurved, and armed at the edges with opposite, somewhat distant, recurved spines, and clothed on the upper side with a grey tomentum, and silvery white below. Native of Chili.

RAPHIA.

A genus of scaly-fruited pinnate-leaved Palms, which form handsome plants in their natural habitats, but which are extremely difficult to cultivate, as they require to have their roots almost always in water. Pot in a mixture of two parts peat, one part loam, and one part leaf mould and sand. They are increased by seeds, which require strong bottom heat to induce them to germinate.

R. Hookerii.—This plant is very rare in cultivation, and exists in our collections in a young state only. The leaves are pinnate, and of a dark green colour; the petioles are clothed with coarse dark brown fibres; and the whole plant is destitute of spines. Native of Western Tropical Africa.

R. Ruffia.—Leaves from two to six or more feet in length, pinnate; pinnæ about twelve inches long, and of a bright dark green; the petioles are unarmed, dark green, except at the base, where they are brown, and fringed at the edges with coarse fibres. Native of Madagascar and various African Islands.

R. toedigera.—A superb plant, the stem of which rarely exceeds eight or ten feet in height, whilst its pinnate leaves often reach the extraordinary dimensions of forty and fifty feet in length, presenting a magnificent plume-like crown. It is a very handsome plant in a young state, but is rare in cultivation. Native of Tropical America.

RHAPIS.

A genus of slender-growing Palms, with fan-shaped leaves, admirably adapted for the decoration of the greenhouse, the dinner table or drawing room, or for the sub-tropical garden during the summer months. They are very ornamental plants, and withstand unharmed a considerable amount of rough treatment. For soil use loam and peat in equal parts, adding a little sand. They produce suckers freely, and may be increased by this means, and also by seeds when they are obtainable. As far as we know, the genus has neither flowered nor fruited in this country.

R. flabelliformis.—This elegant slender-growing plant, which forms a beautiful object for the dinner table, for the centre of a jardinette, or for the decoration of apartments generally, is equally at home in the stove or greenhouse. The stems are slender; the leaves flabellate, upon short footstalks, and of a dark green colour; the petioles are slender, sheathing at base, and firmly enclosed in a tissue of brown fibres. The leaves are very persistent, so that a plant with a stem of six feet may be frequently seen with perfect leaves down to the very bottom. Walking-canes are made from the stems, and imported under the name of Ground Rattans. Native of China and Japan.

R. flabelliformis variegata.—A beautiful variety of the preceding, with broad longitudinal bands of white and yellow, which give the leaves a strikingly handsome character. It is, however, somewhat rare in cultivation. Native of Japan.

R. humilis.—The present species is grown in some collections under the name of *R. Sierotzik*. It resembles

R. flabelliformis in general habit, but the leaves are larger, and the segments are more pendent, rendering it a beautiful object for dinner-table decoration, or for the adornment of apartments, &c. Native of Japan.

RHOPALA.

This very ornamental family of plants is met with in South America, a country in which very few of the *Proteaceæ* occur. The order contains many plants remarkable for the beauty of their flowers, as well as those whose chief ornament consists in their leaves, but it is not important in either a medicinal or economic point of view. The *Rhopalas* (sometimes written *Ropala*) are, however, very ornamental plants, and may easily be grown into good specimens. They should be potted in a soil composed of about equal parts of loam and peat, to which must be added a small portion of sand. During the growing season they require a good supply of heat and a moist atmosphere in order to develope their leaves properly, but when growth is completed a drier cooler and house suits them admirably, so that although stove heat is necessary when their shoots are immature, they afterwards form splendid objects for the decoration of the greenhouse or conservatory. These plants are increased by cuttings, but they are somewhat difficult to strike; ripe lateral shoots form the best cuttings, and these should be inserted in sand, and not kept very warm; they must not, however, be allowed to remain in a damp state. The old stems cut up into single eyes also produce young plants, but they are not easily rooted. If seeds can be procured in a fresh state, they will germinate pretty freely, and produce plants of better form than those obtained from cuttings or eyes.

R. aurea.—A very fine-growing plant, with large, oblong, somewhat oblique leaves, with serrated edges, dark green above, paler below; it is distinguished by the young growth being clothed with a golden yellow tomentum. Native of Brazil.

R. corcovadense.—This is a fine plant, and one that forms a beautiful ornament in the greenhouse. The leaves are from one to three feet in length; pinnate pinnæ, six to eight inches in length, oblong-acuminate, with an oblique base, and deeply serrated edges, they are dark shining green on the upper side, paler below; the young growth is clothed with a rich brown tomentum, which falls off with age. Native of Brazil.

R. Jonghei.—A noble plant, similar in general character to the previous species; the leaves, however, are longer, and the pinnæ much broader, and the whole plant is of a much paler green. It forms a beautiful ornament to the stove. Native of Brazil.

R. Skinnerii.—This is a very much smaller plant in every respect than any of the species we have enumerated. The leaves are slender, and the pinnæ very narrow, attenuated at the base, tapering to a point and serrated at the edges, dark green above, paler below; when well grown it is an elegant plant for table decoration. Native of Guatemala.

RICINUS.

This genus of *Euphorbiaceæ* contains the plant popularly known as Palma Christi (*R. communis*), from the seeds of which is obtained the medicine known as Castor Oil. *Ricinus* will thrive in any rich soil, and as the plants are magnificent objects in the sub-tropical garden, they cannot be encouraged too much. There are numerous varieties of

R. communis, differing in size and in their leaf tints, but they are not of sufficient difference to be described individually. The seeds are readily obtainable at the seed shops, and should be sown in heat about February, and the young plants potted and grown on as stocky as possible, previous to being fully hardened off for planting out in the early part of June.

R. communis.—This very ornamental plant and its varieties attain a height of from four to six feet. The stems are branching and glaucous, the leaves large, palmate, and serrate at the edges of the lobes, and altogether of a noble character. The varieties differ chiefly in the tint of the stalks and leaves, some being reddish, some greyish, from the strong glaucous bloom on the surface, and some glossy green. Those known as *sanguinea*, *borbonica*, and *viridis* are among the best for decorative purposes. Native of the Cape of Good Hope.

SABAL.

A genus of magnificent fan-leaved Palms, belonging to the section *Coryphæ*. They are distinguished by their irregularly branched flower spikes, which are produced from amongst leaves; the flowers are all perfect, and the fruits are one-seeded. Many of them grow to an immense size, but all are highly ornamental in a young state, and will stand well in the sub-tropical garden during summer. They are plants of robust constitution, which enables them to withstand uninjured a low temperature, and, in consequence, several of the species form excellent window plants, and our continental neighbours avail themselves of these and many others to a much greater extent than has hitherto been practised in Great Britain. This disgrace to us as plant growers and plant lovers is, however,

fast being removed, as Palms fortunately and deservedly are becoming a favourite class of plants. *Sabals* sometimes make a few suckers, which should be taken off when about a foot in length, when, if they have no roots, they must be carefully nursed until they are rooted; but the ordinary and best mode of increasing them is by seeds.

S. Adansoni.—An extremely slow-growing species, one which we have never seen with an erect stem; it, however, forms a very ornamental plant in the greenhouse, and is also very useful for grouping in the sub-tropical garden. Petioles two to three feet in length, supporting deeply cleft flabelliform leaves, which are dark green above, silvery grey beneath. The leaves of this plant are used for plaiting into hats. Native of the Southern United States.

S. Blackburniana.—This species, when mature, produces leaves of immense size; they are flabellate, plaited, and divided at the margins into narrow pendent segments of a blue green colour, saving the centre of the leaf close to the ligule, or point of attachment to the petiole, and there occurs a large triangular blotch or mark of yellowish white, extending upwards. The petioles are sheathing, perfectly smooth, and enclosed in a mass of rough fibrous matter at the base. It is admirably suited for a window plant when small, and for the sub-tropical garden in summer. Native of the West Indies.

S. umbraculifera.—The plant we have in our gardens under this name, so far as we have been able to discover, differs from *S. Blackburniana* only in colour; in the last-named species the leaves are very glaucous, whilst in *S. umbraculifera* they are dark green. It is of robust constitution, and may be used wherever a plant of this character is required for decoration. Native of the West Indies.

SACCHARUM.

A genus of peculiar interest, on account of one species yielding us so much of our sugar. Indeed, when cane sugar was the only kind imported, this species produced all we consumed; now, however, this article is procured from many other sources. These plants are very ornamental, and have a beautiful effect in the decoration of apartments, and in the summer assist greatly in the ornamentation of the open garden, if a sheltered spot is selected for their reception. The soil should consist of loam and well-decomposed manure, in equal parts, adding a little peat and leaf mould. They may be increased by inserting the joints or eyes as cuttings in a moderate bottom heat.

S. officinarum (the Sugar Cane).—A tall-growing grass, with stout erect stems, and long, broad, dark green leaves, which hang in graceful curves, forming an elegant and beautiful object amongst a collection of plants. It is a native of both the East and West Indies.

S. violaceum.—This plant resembles the preceding in growth and general appearance—indeed, is probably only a variety of that species—but it differs materially in the colour of its stem, which, instead of being yellowish green, is of a rich violet or plum colour. Native of the West Indies.

SANCHEZIA.

This Acanthaceous genus we introduced into our work upon "Choice Stove and Greenhouse Flowering Plants," and we are compelled to again allude to it here, upon account of the extreme beauty of its variegation, more especially as another handsome kind has recently been introduced to our gardens. These plants should be potted in a mixture

consisting of about equal parts of fibrous peat and light loam, with some silver sand added. The pots should be well drained, so that a copious supply of water may be given. To ensure success with *Sanchezias*, and to have perfect leaves developed, a careful watch must be kept to destroy the various kinds of Aphis, which seem to have a great partiality for the young and tender shoots. They are easily increased by cuttings of the young wood, inserted in a cutting pot, and plunged in a moist bottom heat.

S. glaucophylla.—This plant is very distinct from the following, and if possible more beautiful. The leaves are more acuminate than in *S. nobilis variegata*. The ground colour is dark green, the primary veins and margins rich yellow, whilst the mid-rib is deep crimson. The stems are not winged as in the last-named plant, but are terete and purplish red. It is a native of Ecuador.

S. nobilis variegata.—A free-growing handsome plant, producing large opposite leaves, which are obovate-oblong, and about twelve inches in length. The ground colour is bright green, with the margins and all the primary veins rich orange yellow. This most beautiful and free-growing plant is a native of Ecuador.

SARRACENIA.

A genus of very singular plants, typical of the order *Sarraceniaceæ*. They have hollow cylindrical leaves, with a jointed lid at the apex, which is said to be the true leaf. These plants are all natives of North America, but with the exception of one species, they will not stand out-doors in the English climate, and this, in favoured and properly prepared spots, may sometimes survive for a year or two. In their native country they inhabit bogs and marsh land,

a fact which cultivators would do well to bear in mind. The leaves of *Sarracenias*, like those of *Nepenthes*, seem to be endowed with the power of secreting a fluid which is very attractive to insects of all kinds, and as the inside of their pitcher-like leaves is clothed with bristles pointing in a downward direction, it becomes an impossibility for the victim once enclosed to escape. The soil best adapted for these plants is peat and living sphagnum moss, in about equal parts, and when growing they enjoy a top-dressing of rich rotten manure. The pots should be thoroughly drained. After potting many cultivators place the pots in pans of water ; others strongly object to this practice, and strange as it may appear, we have seen them thriving magnificently under these extremes of treatment. We have usually grown them with some moss between the pots, to assist in keeping the roots cool and moist, and occasionally treating them to a light sprinkling of water from the syringe. During summer an abundant supply of water should be administered by the watering-can, but in winter very little will suffice, although they must by no means be allowed to become dry or to feel the want of water. *Sarracenias* are increased by divisions of the old plants, but the chief means of maintaining the supply is by importations direct from their native country. The best cultivator of this genus whom we know is Mr. Baines, gardener to — Micholls, Esq., Southgate, who grows them in a cool Fern house, and as his success with these plants has been so great, we cannot do better than advise our readers to follow his example.

S. Drummondii.—This is one of the tallest and finest kinds yet brought into cultivation. The crown of the plant is bright red. The hollow pitchers attain a height of from two to three feet, and are slender at the base,

swelling upwards, broadly winged in front, and of a bright light green colour, the lid and throat being in addition beautifully mottled and streaked with reddish crimson. The scape rises about two feet, and bears a single large deep crimson flower.

S. Drummondii alba.—In general appearance this resembles the preceding, and the colour of the flower is the same. The difference consists in the lid and throat, instead of being reddish crimson, being beautifully blotched and spotted with white, which affords a fine contrast with the species.

S. flava.—There are in our collections three distinct plants under this name, but that here described is, we believe, the plant originally described and figured as *S. flava*. The pitchers are erect, and from two to three feet in length, narrow at the base, widening upwards, and forming a large open throat, with a broad lid; neither throat nor lid is marked in this plant, but the colour throughout is a uniform bright green. The flower scape is about the height of the leaves, and bears a single large light yellow flower. Native of the swamps of Virginia and Florida.

S. flava maxima.—This plant attains a height of three feet. The pitchers are small at the base, swelling upwards; they are slightly winged in front, and form a broad open throat, which is somewhat thickened round the margins, and white inside; the lid is large, very erect, curved backwards at the edges, and, as well as the whole plant, of a full green colour. The scape bears a large light straw coloured flower. This may be a form of the preceding, or it may prove specifically distinct, but it is so different that for convenience sake we have given it a provisional name. Native of North America.

S. flava picta.—This is another plant which has been distributed under the name of *S. flava*, though it is very distinct from the normal state. It is erect in habit, producing pitchers from one to three feet in length, broadly winged in front, and of a bright light green colour, the throat large, and beautifully streaked and veined with crimson; the lid is large, and protruding over the mouth. The flowers are light yellow.

S. purpurea.—This plant is widely distributed in North America. It is prostrate in habit, producing stout pitchers, which are broadly winged in front, and of a dark reddish green colour; the lid is large, erect, the throat and inside of the lid hairy, and beautifully veined and streaked with deep crimson. The flowers are of a reddish purple colour. This plant succeeds well in a cool frame, protected from rough winds and storms. It is common about Quebec, and in Canada generally, extending south to Carolina.

S. purpurea viridis.—A variety of the preceding, resembling it in shape and size, but the throat and lid is destitute of the rich crimson markings so conspicuous in that species, and the whole plant is a uniform bright green. Found in company with *S. purpurea*; under cultivation this proves more hardy, as with but a slight protection it will live in the open air during winter.

S. pittacina.—We have only seen this plant in a young state, and cannot say to what size it may attain. In habit it is prostrate. The pitchers are winged in front, with a cucullate lid, somewhat resembling a parrot's beak; they are reddish purple, mottled with white towards the apex; the flowers are purple. It is a very distinct species of recent introduction. Native of swampy ground in Florida.

S. rubra.—A slender-growing plant, with leaves varying

from one to two feet in length, and of a bright green colour, the throat small, profusely striped with reddish crimson veins. The lid is small, and the scape is tall, supporting a single purplish red flower, which is very sweetly scented, like violets. Native of Florida, &c.

S. variolaris. — This species varies from twelve to eighteen inches in height, sometimes more. It is erect in habit. The pitchers are broadly winged in front, light green, the upper part cucullate, and handsomely mottled with white; the flowers are light yellow. It is sometimes to be found in collections under the name of *S. adunca*. Native of North Carolina, &c.

SCHEELEA.

A genus of Palms with very little to distinguish it from *Attalea*, although some of our best authorities upon this order maintain it as generically distinct. It belongs to the *Cocoinææ*. All the species are unarmed, with pinnate leaves; the species we include here is a magnificent plant. The soil should be peat and loam in about equal parts, adding a little sand. It should be grown in the stove, and when small, is well adapted for the decoration of apartments, and for public exhibition purposes when it has attained age. Increase is effected by seeds.

S. unguis.—This is a most superb plant. We have not seen it with any stem, and therefore cannot say to what height it grows. The leaves are erect, pinnate, two to six or more feet in length; the base of petioles is sheathing, and clothed somewhat sparingly at the edges with brown fibres; the pinnae are about twelve inches in length, and one inch in breadth, reaching nearly to the base of the petiole, and of a rich deep green. The whole plant is destitute of spines. Native of Tropical America.

SCINDAPSUS.

A small genus of *Araceæ*, mostly climbers. The single species introduced here is admirably adapted for hanging baskets, or for rock-work in the stove; it also looks very elegant when trained upon the stems of Tree Ferns or Palms. If grown in baskets, a mixture of fibrous peat and sphagnum moss will suit it well; if in pots, peat and sand. It is increased by cuttings or by division.

S. pictus.—This is an elegant trailing plant. The leaves are alternate, obliquely-ovate in shape, and somewhat fleshy in texture, of a deep green colour, blotched with silvery white. As a basket plant, or when used to cover a wall, it has a beautiful effect. This plant was distributed under the name of *Pothos argyrea*, when first introduced from Java; another somewhat inferior variety with larger leaves, but not so brightly blotched with white, has also been introduced to our gardens from Borneo.

SEAFORTHIA.

Of this genus we have only one species in cultivation, although it would appear there are many species in the East Indies yet to be introduced to our gardens. It is a most graceful plant, eminently adapted for the decoration of the greenhouse and the sub-tropical garden. *Seaforthias* should be potted in a mixture of peat and loam. In a young state, when the plants will be wanted to grow quickly, we advise that the soil should consist of a mixture of two parts peat, to one of sand and loam; but when they have attained some feet in height, many cultivators may wish to retard them, and then we advise that the soil should be nearly all sandy loam. Like most of this order, *Seaforthias* are only increased by seeds.

S. elegans.—Although this plant has been figured in the *Botanical Magazine* under the name here adopted, it is also known as *Ptychosperma Cunninghamii*, and many botanists who are practically acquainted with this order, declare it not to be the *S. elegans* of Rbt. Brown, and that it should never have been so called. This plant, in its native habitat, rises upon a somewhat stout straight stem to the height of about thirty feet, but in this country it requires many years to reach half that altitude. The leaves are from two to ten feet in length; petioles broadly sheathing at the base; pinnæ lanceolate, narrow, unequally bifid at the apex, from twelve to eighteen inches in length, dark green; the whole plant perfectly smooth. It makes a fine effect in the sub-tropical garden, is one of the finest greenhouse or conservatory decorators, and is also well suited for a window plant. As above noted, it is more correctly called *Ptychosperma Cunninghamii*. Native of the northern parts of Australia.

SMILAX.

This genus of undershrubs is of scandent habit. Many of the species have very ornamental foliage, and are well adapted for pillar climbers, or training upon balloon-shaped trellises. From various species of this genus the Sarsaparilla of commerce is obtained. The most esteemed kind or quality of this drug is supposed to be yielded by *Smilax officinalis*. They succeed well potted in a mixture of rough peat and loam, with a little river sand; drain the pots well, and supply liberally with water. These plants may be increased by cuttings, or by divisions of the roots, as they frequently produce suckers.

S. longifolia variegata.—This species is one of our recent introductions. It is a rough-stemmed climber, with oblong-

acuminate dark green leaves, having four irregular bands of silvery grey extending from the base to the apex. It is a very ornamental plant. Native of Para.

S. macrophylla variegata.—A scandent plant, with a rough prickly stem, producing large ovate-acuminate leaves, which are dark green, and irregularly blotched upon the upper surface with silvery grey. It forms a handsome specimen when trained upon a balloon trellis, or upon a rafter or pillar in the stove. It is a native of Tropical America.

SOLANUM.

As a genus this is well known, on account of the Potato being the produce of one species, *S. tuberosum*. It is a very large genus, and, as is frequently the case, it contains many kinds which have no striking characters to recommend them as garden decorators. On the other hand, however, many are exceedingly ornamental, and form fine additions to the gardens in the open air during the summer months. *Solanums* delight in rich soil, and therefore should be potted in loam, leaf mould, and well-decomposed manure, in equal parts, adding a little sand to the whole, to keep it open. They are best grown from seeds every year, to effect which these should be sown in a gentle heat about March, when, if properly attended to, they will be ready for planting in the open air about the end of May.

S. amazonium.—This very handsome species attains a height of about two feet, and is an undoubted acquisition for out-door gardening during the summer months. The leaves are dark green, somewhat ferrugineous, and quite destitute of spines; it also produces in great profusion flowers of rich dark purple. A native of Mexico.

S. callicarpum.—Stem clothed with stout spines; the

leaves are very broad, one to two feet in length, deeply sinuate; they are supported upon deep purple footstalks, which gives the whole plant a beautiful appearance. It attains a height of about four feet, and is one of the best for planting in the open air during summer. Native of South America.

S. laciniatum elegans.—This plant forms beautiful compact bushes. The leaves are long, pinnatifid, the segments linear-lanceolate, quite smooth, and of a dark green colour. In addition, it produces an abundance of large bright blue flowers, which render it a most attractive plant. Native of Australia.

S. macrophyllum.—This plant attains a height of about six feet. The leaves are large, deeply sinuate; it resembles *S. callicarpa* very much, but has a less prickly stem, and is taller in growth. A fine ornamental kind. Native of Peru.

S. marginatum.—Also found in collections under the name of *S. cabiliense argenteum*; under whatever name, however, it is grown, it is a decided acquisition to the sub-tropical garden; it attains a height of three to four feet. The stems are white, and armed with stout spines; the leaves are broadly oblong in form, six or eight inches in length, very white on the under side, greenish white on the upper, margined with bluish white. Native of Africa.

S. maronense.—An elegant kind, producing large sinuate leaves, which are armed with a profusion of white spines. Like many others of this genus, which are so eminently adapted for the embellishment of our gardens in summer, its flowers are very attractive, being of considerable size, and bright lilac in colour; and it is well deserving the attention of all cultivators. Native of South America.

S. pyracanthum.—This very fine plant is a superb orna-

ment in the sub-tropical garden during the summer months. The leaves are narrowly oblong, deeply sinuate, and armed on both sides, as well as the stems, with long dark brown spines. It is well deserving general cultivation for out-door work. Native of Madagascar.

S. robustum.—This species attains a height of four feet. The stems are winged; the leaves very large, dark green, and densely clothed with rich tawny hairs. A very distinct and ornamental kind. Native of South Africa.

S. stramonicefolium.—This is a beautiful ornament to the sub-tropical garden. It grows several feet in height, and produces leaves from eighteen to twenty-four inches in length, and about twelve inches in breadth, deeply lobed, the upper side dark green, the under side rosy purple, and the primary veins white, these latter, on both sides, being furnished with stout spines. Native of the East Indies.

S. Warscewiczoides.—A fine plant for the sub-tropical garden, producing broad deeply cut leaves, with the primary veins white. The stems and both sides of the leaves are clothed with stout brown spines. Native of Tropical America.

SONERILA.

A genus of dwarf-growing Melastomaceous plants of great beauty. Many of them are exceedingly attractive objects when laden with their bright coloured, although small flowers; but the species here introduced is remarkable for the beauty of its leaves, which is greatly heightened by the charming flowers. They form beautiful ornaments for the stove, and as they increase freely, a stock should be kept for the temporary decoration of vases in the drawing room, or for the dinner table. To manage these plants successfully, they should be grown

in good fibrous peat, with a little good leaf mould, and a liberal addition of sand. Drain well, as during summer an abundance of water is necessary, but during winter it must be withheld. They must be placed near the glass, and be but moderately shaded, as they enjoy exposure to the light. To increase them, place rather small cuttings in a properly prepared pot, plunged in bottom heat, and cover with a bell-glass.

S. margaritacea.—A beautiful low-growing plant, which branches freely, and produces small somewhat oblong-lanceolate leaves, which taper to a point, and are of a rich dark green colour, scattered over with a quantity of round pearly white spots, which give it a most elegant appearance. These, again, are set off by the numerous small but pleasing rose coloured flowers, which latter, however, must be kept thinned, or they will be developed so abundantly as to weaken the plant. Native of Java.

SPLÆROGYNE.

The plants belonging to this genus are of noble aspect, and highly ornamental. They somewhat resemble *Cyanophyllum*, although abundantly distinct. The soil and treatment recommended for that genus at page 173 will, however, suit them admirably. They require a very moist atmosphere to keep them in full beauty; neglect of this will cause the edges of the leaves to turn brown, by which the beauty of the whole plant becomes marred. Increased by cuttings, in a strong heat.

S. cinnamomea.—A handsome ornamental-foliaged plant, with opposite leaves from nine to eighteen inches in length, and about eight inches in breadth; the colour on the upper side is bright light green, the under side paler; the foot-stalks and mid-rib, as well as the stem, are densely

clothed with short bright cinnamon coloured hairs, which afford a pleasing contrast to the light green leaves. It is an elegant quick-growing plant of great beauty, deserving of a place in every stove. Native of Costa Rica.

S. imperialis.—This is another very fine species, producing large elliptic leaves, the upper surface of which are of rich dark velvety green, while the primary veins are reddish towards the base. A superb plant, and thoroughly distinct from other species of the genus. Native of Peru.

S. latifolia.—The stem and leaf stalks of this magnificent species are clothed with rough light brown reversed hairs. The leaves are opposite, a foot or more in length, ovate, and of a beautiful rich dark olive green in colour on the upper surface, the under side being dull red. No collection of ornamental plants should lack this superb and elegant species. It is a native of Costa Rica.

STANGERIA.

A fine and very distinct genus of *Cycadeaceæ*, of which only one species is at present known, and that so Fern-like in its aspect, that dried specimens had been described by some learned botanist under the name of *Lomaria eriopus*. It is similar in habit to *Encephalartos* and *Zamia*, and requires similar treatment. It will, however, succeed perfectly in a dry warm greenhouse.

S. paradoxa.—A distinct-looking plant, having a stout napiform stem, which does not appear to acquire any considerable length. The leaves are pinnate, two to three feet long, on stoutish petioles, which are somewhat woolly at the base; pinnæ oblong lanceolate, bluntish (in some forms quite obtuse), and slightly toothed towards the apex. A ready means of distinguishing this plant among the *Cycads* is furnished by the position of the veins, which are

here transverse in the pinnæ, not longitudinal, as in all other known forms of the order. The male and female cones are borne on separate plants, the former narrow-cylindrical, the latter shorter and broader, so as to become of an ovate form. Native of Natal.

STENOCARPUS.

A genus of *Proteaceæ* which is well deserving more general attention, as the species form beautiful objects in the greenhouse or conservatory. They may be found sometimes in collections under the generic names of *Agnostus* and *Embothrium*. The soil for these should be composed of peat and sandy loam in equal parts; and they are increased by cuttings from the ripe wood.

S. Cunninghamii.—A slow-growing but beautiful plant. The stem is erect; the leaves from twelve to eighteen inches in length, four or five broad in the widest part, deeply pinnatifid, and dark green on the upper surface, somewhat ferrugineous below. In addition to its ornamental foliage, the bright scarlet flowers—which are produced from the stem—render it an object of great beauty and interest. Native of Moreton Bay.

STRELITZIA.

This genus is very ornamental, both in foliage and flower. It is, however, upon account of its ornamental leaves that we wish to recommend it, as the leaves give a very tropical appearance to the garden in the summer season, and being of a leathery texture they are not easily injured by the wind. These plants are very little trouble to grow, and after they have served for ornamenting the sub-tropical garden, they may be brought into the stove during winter, when they frequently continue blooming

for several months. *Strelitzias* should be potted in a mixture of two parts rich loam, and one part peat, with a little river sand added ; they require a liberal supply of water during summer, but if the object is to keep them dormant during winter, very little need be given, as their thick fleshy roots support them for a considerable time. They may be increased by suckers, by divisions of the old plants, and by seeds when procurable ; these latter should be sown in light soil, and plunged in a strong moist bottom heat, when they will soon germinate, and increase in size rapidly, if encouragement is given them.

S. augusta.—A noble-looking plant, producing a splendid effect in the stove or greenhouse, and as its leaves are thick and leathery, it is equally effective in the sub-tropical garden during the summer months. The leaves are arranged in a distichous manner, and are dark green in colour ; the petioles are from three to six feet long, and slightly glaucous, whilst the blade measures two feet or more in length, and from twelve to eighteen inches in breadth. Native of the Cape of Good Hope.

S. regina.—This species resembles the preceding, but is not so large in its growth, and the whole plant is glaucous green. In addition to its fine foliage, it produces abundance of its large orange and blue flowers, which render it very attractive. Native of the Cape of Good Hope.

SYAGRUS.

The present genus of Palms very much resembles *Cocos* in appearance, and, indeed, is very nearly allied to that genus. They are plants of medium height, and have gracefully arched pinnate leaves ; the flower spike is branching, enclosed in a single spathe, and the flowers, although produced on the same spike, are monœcious ; the

fruits are bony, and one-seeded. The treatment recommended for the genus *Cocos* will suit these plants also. They are multiplied by seeds.

S. campestris.—An elegant and highly ornamental plant. Stem swollen at the base ; petioles broadly sheathing and very thick, clothed at the edges with some woody brown fibres, and armed with a few stout dark reddish brown spines on the naked portion of the petiole. Leaves pinnate, spreading two to six feet or even more in length ; pinnæ eighteen to twenty-four inches in length, and not more than half an inch in breadth. The whole plant is glaucous, and very graceful in habit. It is very effective in the open air during summer, if properly surrounded. Native of Brazil.

TERMINALIA.

The plants in this genus contribute largely to our wants and luxuries, yielding in abundance articles which are used both in medicine and art. One species yields an important dye, whilst several others are astringent and tonic ; from another species (*T. catappa*) the pigment known as Indian Ink is obtained, and various others are equally serviceable to man. Upon their economic properties we, however, do not intend to enlarge, but content ourselves with recommending those which contribute to the embellishment of our gardens. They are plants of wide distribution, being found in the East Indies, Mauritius, Madagascar, South America, Guiana, Cape of Good Hope, and various other places. Several other species besides those here given have been in cultivation in our stoves, but unfortunately, through some mischance, have disappeared. *Terminalias* are noble evergreens, and should be potted in a mixture composed of equal parts loam and peat, with a good portion of silver sand added. They enjoy a

strong moist heat and abundance of water, both in the atmosphere and at the roots, in the growing season, but both heat and moisture must be moderated to some extent during winter. To increase them, cuttings of ripened wood should be made in spring, but they require some considerable time to make roots.

T. elegans.—This species is very handsome. The leaves are trifoliate, the leaflets long and narrow, tapering to a point; the ground colour is bright green, over which is a beautiful network of dark coloured veins, and in addition to this, the mid-rib is bright red. The plant grows in a regular pyramidal form, and the beauty of its outline, and its handsomely marked and glossy leaves, constitute it one of the most appropriate plants for the decoration of the dinner table, and a never-failing source of pleasure in the stove. It is a native of Madagascar.

TESTUDINARIA.

This is a small genus belonging to the *Dioscoreaceæ*. The species included in it are exceedingly interesting, on account of their peculiar woody stem. They should be grown in sandy loam, with a little well-decomposed leaf mould.

T. elephantipes.—This singular plant is popularly known as the Elephant's Foot, from its curious thick plated trunk. From this arises a slender climbing stem, producing somewhat small, reniform, mucronate leaves of a bright green. It forms a nice climber for the greenhouse, and its massive trunk is an object of great interest. Native of the Cape of Good Hope.

THEOPHRASTA.

A genus of very ornamental stove plants, belonging to the order *Myrsinaceæ*, with stout coriaceous leaves of great

beauty. The species introduced in this place are well deserving general cultivation for their noble and majestic appearance. The soil best adapted for their culture is peat and loam in equal parts, with a little sand. They are increased by cuttings and seeds.

T. imperialis.—This magnificent plant is most ornamental when confined to a single stem. The leaves are alternate, oblong or somewhat spathulate, and bluntly acuminate, tapering slightly towards the base; they are from two to three feet in length, and six to eight inches broad, deep rich green on both sides, and armed at the edges with sharp spines. It requires stove treatment, and is found sometimes in collections under the name of *Curtella imperialis*. Native of Brazil.

T. Jussieu.—A superb stove plant, abundantly distinct from the preceding species. The leaves are alternate, closely set together, oblong, with an obtuse apex, and armed at the edges with stout spines; they are from one to two feet in length, some three inches in breadth, and of a dark green colour. Native of St. Domingo.

T. macrophylla.—A noble ornament to the stove. This produces a stout stem; the leaves are from one to two feet in length, obovate-lanceolate, tapering to a narrow base, serrate at the edges, and ending in a sharp point; they are rich bright green above, paler below. It also produces a profusion of spikes of orange yellow flowers from the axils of the leaves, which by contrast materially enhance its beauty. It is found in some gardens under the name of *Clavija macrophylla*. Native of Brazil.

THRINAX.

The name of this genus is derived from *Thrinax*, a fan, from the resemblance of their leaves to that of a ladies'

fan, but the name is equally applicable to many other previously mentioned genera. *Thrinax* is distinguished by having branched spikes, bearing greenish yellow perfect flowers, which are succeeded by round-seeded berries. These plants are admirably adapted for stove or greenhouse decoration, where their fine leaves are objects of extreme beauty. We have not, however, seen any species used in the sub-tropical garden, although we have no hesitation in saying, that in all probability some of them would stand there without the slightest injury during summer. To grow them well, use a mixture of rich loam and peat, in the proportion of two parts of the former to one of the latter, to which add a portion of sand. They may be increased by seeds, and sometimes suckers are to be obtained.

T. arborea.—An elegant and very distinct species. The petioles are erect, furnished at the base with a close white fibrous texture. The leaves are flabellate, and very peculiar, being divided nearly to the point of attachment into broad bifid segments, which even in young plants are upwards of two feet in length, bright green on the upper side, and silvery white below.

T. graminifolia.—This is a very elegant species. The petioles are slender, about two feet in length, and enclosed at the base in a network of white fibres. The fan-like leaves are divided into narrow segments for about half their diameter, bright green on the upper side, glaucous below. Native of Tropical America.

T. grandis.—An elegant plant, with which we are only acquainted in a young state; it appears, however, to be very distinct. The petioles are slender, surrounded at the base with a network of fine white fibres. The leaves are flabellate, plaited, divided into narrow segments, and full green. Native of Tropical America.

T. miraguana.—A very slow-growing but beautiful plant. Stem somewhat slender. Leaves fan-shaped, or forming a complete circle, divided at its margin into narrow segments, the upper surface deep green, but below silvery grey. The petioles are slender, quite smooth, and enclosed at the base in a most peculiar network of fibres; so close and regular is it netted that it seems almost to have been woven by hand, rather than by natural growth. Native of Cuba.

T. multiflora.—This is one of the most magnificent Palms in cultivation, and with age attains a considerable height. The stem and petioles are slender, the latter from four to six feet long or even more, and furnished at the base with large white woody fibres. The leaves are flabellate, being, in a young state, from two to three feet in length from the point of attachment to the margin; these are divided for about half their length into segments of two inches in breadth, and thus form a beautiful pendent frill round the lower portion of the leaf. The colour on the upper side is bright green, silvery white beneath. It is sometimes called *T. elegans*, which is incorrect—*T. elegans* is the same as *T. radiata*. Native of Central America.

T. parviflora.—This is a dwarf-growing but very elegant species. The petioles are slender, from eighteen to twenty-four inches in length, clothed at the base with a slight fibrous texture, and spreading outwards with the weight of the palmate leaves, which are about twenty-four inches from base to apex, divided about half way down into somewhat narrow segments, and bright green in colour. Native of the West Indies.

T. pumilio.—The petioles of this kind are erect and slender, supporting large palmate leaves, from one to three feet in diameter, and divided for about half their



TILLANDSIA LINDENII.

Peru.

length into narrow segments, bright green in colour. It is a very desirable and handsome plant. Native of the West Indies.

T. radiata.—As its name implies, the leaves of this species are spread out all round. The stem is slender, swollen at the base; petioles two feet or more long, yellow, quite smooth, except at the base, where they are furnished and enclosed with a profusion of light brown fibrous network. The palmate leaves are about eighteen to twenty-four inches from the point of attachment to the margin, and are divided for about half that distance into pendent segments; colour rich dark green on both sides. This plant is usually found in collections under the name of *T. elegans*, but as *radiata* is the oldest name it must necessarily take precedence. Native of the West Indies.

TILLANDSIA.

A genus of Bromeliaceous plants, containing many species remarkable for the beauty of their flowers, but the few kinds here introduced are plants of extreme beauty of leaf, in addition to their floral attraction. These plants should be grown in spongy peat, with the addition of a little loam and sand; they may be increased by suckers and seeds.

T. argentea.—This very elegant plant succeeds best when grown upon a block. The leaves are arranged in a rosulate manner, sheathing at the base, where they are broad, tapering to a fine point, and clothed with close white hairs, which give the appearance of frosted silver. Native of Trinidad.

T. Lindenii.—Leaves arranged in a rosulate manner, broad and sheathing at the base, tapering upwards, and ending in a fine point, beautifully recurved, light green

on the upper side, suffused with rose underneath, and marked with parallel lines of reddish brown. It bears a handsome broad distichous scape, which is rosy carmine, and the flowers are azure blue, with a pure white eye. It is a most elegant plant, fit for table decoration or for ornamental vases, and should be in every collection of plants, however small. Native of the province of Huanca-bamba, in Peru.

T. splendens.—A very beautiful old species, well deserving more general attention than has been accorded it. The leaves are rosulate, sheathing at the base, ligulate, and recurved dark green on the upper side, striped with transverse bands of purplish black below, in addition to which it produces a brilliant scarlet distichous scape in the winter. Native of Brazil.

TRITHINAX.

A genus of handsome somewhat low-growing Palms, very ornamental and suitable for decoration of apartments. In addition to their interest in the stove, some of the kinds will stand well also in the sub-tropical garden during summer, if provided with partial shade. The leaves are fan-like, divided into long pendent segments; the petioles are armed with spines at their edges, and enclosed at the base in a mass of rough fibres. The flowers are usually perfect, and seated upon long branching spikes. Fruit usually one-seeded. These plants are well suited to every grower of ornamental-leaved plants, and thrive well in loam and vegetable mould, with good drainage. They are increased by seeds.

T. braziliense.—A superb compact-growing plant, having the petioles quite smooth, two feet or more in length, and supporting elegant fan-like leaves, which measure some eighteen to twenty-four inches from the point of attach-

ment to the margin, where they are divided about half way down into narrow segments, bright green, and in a young state slightly glaucous. The peculiar manner in which the strong woody light brown fibres surrounding the petioles are terminated by a circle of long spines, readily distinguishes this plant. Native of Brazil.

URANIA.

A genus belonging to the order *Musaceæ*, containing but one species, which is popularly known as the Traveler's Tree, from the quantity of water which is secreted in the base of the petioles, and which may be obtained by piercing. The *Uranias* must be grown in strong rich loam, to which has previously been added a little peat and river sand; drain well, and give an abundant supply of water. This plant forms a thoroughly distinct character in a large stove. They are increased by seeds.

U. speciosa.—A superb plant for the decoration of the sub-tropical garden. The stem is simple, and stout; the leaves, which are some six feet in length and dark green, are arranged in a distichous manner, from whence it derives its singular and effective character. It is sometimes to be found in collections under the name of *Ravenala madagascariensis*. Native of Madagascar.

UROSPATHA.

A curious and interesting genus, containing some most remarkable plants, which appear to be semi-aquatic in their habit. We cannot speak of them from experience, for we have never grown them, and neither have we seen them well done in any collection. The *Urospathas* belong to the *Aroideæ*, and have long creeping rhizomes, and stout, leathery, persistent leaves. To grow them they

should be potted in loose turfy peat, with a little loam, and river sand; the pots should be well drained, and during the summer months placed in water for about a third of their depth. If these plants should prove free growing, they will be well deserving cultivation, as, in addition to their peculiar bright colours, the leaves are fantastically mottled, and present a singular and grotesque appearance. They may be increased by divisions of the rhizomes. They have all sagittate leaves, and are natives of Para.

U. varians.—Leaves sagittate, with the basal lobes much elongated; the ground colour is green, mottled with confluent blotches of dull rose.

U. varians grandis.—The lobes of this variety are elongate and divergent; the ground colour is greenish yellow, the veins being darker yellow.

U. varians picturata.—In this plant the basal lobes form nearly two-thirds of the leaf, which is of a bronzy green colour, mottled with silvery grey.

U. varians spectabilis.—Leaves extremely curious; the ground colour is green, and the whole surface is splashed and mottled with yellow and silvery grey, except the margins, which are deep green.

U. varians splendens.—A handsome form, with the basal lobes of the leaves much enlarged; the ground colour and margins are deep green, the secondary veins are also green, the remaining surface is prettily mottled with rose.

VEITCHIA.

A genus named in honour of the ardent and indefatigable collector, the late John Gould Veitch. It is closely allied to *Ptychosperma*, but differs from that genus in the arrangement of its flowers. It is perfectly destitute of spines, and

forms stems some forty or fifty feet high. Should be potted in a compost of two parts peat, one part loam, and one part sand, and supplied with water liberally—indeed, it succeeds admirably in a tank of water, and requires considerable heat. Increased from seeds.

V. Johannis.—A rare plant in cultivation, and the only species at present introduced to our gardens. It was discovered and introduced by the collector whose name it bears. Stem somewhat slender; petioles sheathing at base, and dark purple; leaves pinnate, from three to six feet or more in length; pinnæ upwards of twelve inches long, and about one inch broad, the terminal one very large; the upper side is dark green, while the whole surface beneath is covered with a fine white scaly tomentum; whole plant destitute of spines. Although it is not likely this beautiful plant will become serviceable for greenhouse decoration, yet for the stove, and for public exhibition purposes, it will ever stand in the foremost rank. Native of the Fiji Islands.

VERSCHAFFELTIA.

A noble genus of Palms, in a young state somewhat resembling *Phœnicophorium*, although abundantly distinct. Not the least striking difference, is the fact of its forming a stem very rapidly, which is supported upon an inverted cone of adventitious spiny roots, after the manner of the American genus *Iriartea*. These plants should be treated in precisely the same manner as that recommended for *Phœnicophorium*, at page 270, to which we refer our readers for cultural information. They are increased by seeds only.

V. melanochætes.—This is the most recently discovered species of this genus, and since it has been named, it has

put on quite another appearance, which in all probability will cause it to be removed into another group or receive another generic title. In a young state the leaves are entire, bifid at the apex, and deep bright green in colour. As the plant obtains size, however, the leaves prove to be pinnate, or divided into irregular sessile lobes. The stem is stout, cylindrical; the petioles reddish, and, as well as the stem, clothed with long sharp spines. Native of the Seychelles Islands.

V. splendida.—A majestic and extremely ornamental Palm. The stem is somewhat slender, elevated upon an inverted cone of spiny roots. The petioles are sheathing at the base, and clasping the stem, both being profusely armed with reddish black spines. The footstalk of the leaf is about six inches in length, and destitute of spines, while the blade of the leaf is of a rich bright green colour, from two to four feet in length, and about the same breadth, cleft at the apex, and divided round the edge into regular short obtuse segments. Native of the Seychelles Islands.

WALLICHIA.

The plants comprised in this genus of Palms somewhat resemble the genus *Caryota*; the flowers are, however, very differently arranged, and their leaves are not bipinnate. *Wallichias* do not grow to any great height. They are very ornamental, and therefore well suited for those who have only the accommodation of small houses. They are all natives of the East Indies, and are found growing from the plains up to an elevation of 3,000 feet or more, consequently some species are well adapted for using during the summer season in the greenhouse, although they mostly delight in strong moist heat. They are increased by seeds, or suckers when they can be obtained.

W. oblongifolia.—This is an elegant little species, of a somewhat hardy constitution. Petioles densely clothed with a short deep chocolate coloured tomentum, and enclosed at the base with long black fibres. The leaves are pinnate, from three to six feet or more in length; pinnæ single, except the lowest, which are in pairs, about six inches long and three wide, oblong, with a wedge-shaped base, and erose apex and edges, bright green on the upper surface, silvery white below. This is a pretty plant, not often seen in collections, yet it is one of the commonest species in the mountain valleys of Sikkim, where it is found growing from the low grounds up to nearly 3,000 feet elevation, and it seems to prefer shade; it is also found in Assam.

W. Orani.—An elegant slender-growing species, which does not attain any great size. The leaves are pinnate, about six feet in length, part of which is naked; petioles clothed with a short brown tomentum, and enveloped at the base with a network of black fibres; pinnæ distant, alternate, three-lobed or trifid, with the central lobe much elongated, six to eighteen inches in length and two to six in width, bright green. A very ornamental plant. Native of the East Indies.

W. tremula.—A very handsome and distinct plant. The leaves are pinnate, from two to six feet in length, perhaps more, and the base of the petioles is furnished with long black fibres; pinnæ præmorse, and slightly serrated near the ends, springing in pairs from the rachis, some two feet in length and from one to two inches in breadth, the terminal segment scarcely so long as the pinnæ, but nearly six inches across, dark shining green above, silvery grey beneath. This is a most desirable species. Native of the East Indies.

WELFIA.

A small genus of Palms, nearly related to *Geonoma*; indeed, as far as we know their differences are very trivial. The peculiar name has been given to them in honour of the Royal Family of the house of Hanover, and is therefore a modification of the word Guelph. *Welfias* require the temperature of the stove, and enjoy an abundance of water; they should be potted in a mixture of two parts peat, and one part loam and sand. Seeds are the only means of increasing these plants.

W. Georgii. — An extremely rare species, possessing great beauty. The petioles are two to four feet or more long, and unarmed, flat on the upper side, rounded below, and reddish brown in colour. The leaves are pinnate; pinnæ six to twelve inches long, and about two inches in breadth, broad and sessile at the base, tapering to a tail-like point, the apical pinnæ broad and bifid; colour rich bright green. Native of Costa Rica.

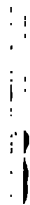
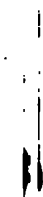
W. regia. — This is a more slender plant than the preceding, and is one of the most elegant of plants for dinner-table decoration. The petioles are long and slender, and the leaves in a young state are bifid, eventually becoming pinnate. When immature these are of a deep reddish crimson, changing to bright green. This extremely handsome small-growing species should be in every collection. Native of New Grenada.

WIGANDIA.

These plants belong to the small order *Hydroleaceæ*, which is not particularly conspicuous for its contributions to our gardens. The species of this genus given here.



WELFIA REGIA.
New Grenada.



are, however, amongst the finest of exotic plants which have been used for the decoration of our gardens in the open air during summer. *Wigandias* succeed well in a mixture composed of loam and peat, with the addition of a little sand and well-decomposed manure. To obtain good handsome plants for the sub-tropical garden, they should be struck from cuttings every year, in about February or March, or they propagate very freely from pieces of the roots planted in a propagating house early in February. The young plants require to be well hardened before being planted out in June.

W. caracasana.—A noble shrubby plant, attaining in cultivation, under ordinary circumstances, some five or six feet in height, but becoming much larger if permitted. The chief beauty of the plant is found in its magnificent leaves, which are obtained by planting out young plants into the summer sub-tropical garden annually, but these, if lifted early in autumn and kept in a stove, bloom freely, and are by no means devoid of beauty. The leaves are broadly oblong, and rounded at the extremities, a foot to a foot and a half in length, and of proportionate width, of a very deep rich green colour, and having a remarkably rugose surface. It is one of the most striking of all the plants used for what is called sub-tropical gardening. Native of the Caraccas.

W. urens.—A plant very closely resembling *W. caracasana* and *W. Vigieri* in its general characteristics. The leaves are, however, somewhat more ovate in outline, and more obviously hairy.

W. Vigieri.—This plant is, we believe, of garden origin. It is of robust growth, yet perhaps less coarse than *W. caracasana*, and the leaves are slightly glaucous. It is used as a sub-tropical plant, and is one of the most effective and

ornamental. It is supposed to be a hybrid between *W. caracasana* and *W. urens*.

XANTHORRHÆA.

An exceedingly curious and interesting genus of *Liliaceæ*, which are very ornamental objects in the greenhouse or conservatory; they are all natives of Australia, and are popularly known as "Black Boys," "Grass Gum Trees," and "Grass Trees." Several species of this genus produce stout stems, varying from six to eighteen feet in height, supporting on their summit large crowns of pendulous grassy leaves; these stems are mostly simple and unbranched, though some few examples are met with supporting two and three distinct heads, whilst other species never develop an arborescent stem. A gum resembling Dragon's Blood is obtained from some of these plants, and imported under the name of "Black Boy Gum." These plants should be potted in a mixture of peat, loam, and sand, in equal parts.

X. arborea.—This species develops a stout stem, which is sometimes branched; the leaves are long, somewhat triangular, and slightly glaucous. Native of Australia.

X. australis.—The accompanying woodcut will give an excellent idea, not only of this species, but of most of the arborescent kinds. The leaves of *X. australis* are not three-cornered, as in the preceding plant, but are sword-shaped. Native of Australia.

X. hostile.—Stem short, so far as we at present know this plant; the leaves are sword-shaped, and somewhat glaucous. It is known also by the name of *X. media*. Native of Australia.

XANTHOSOMA.

This is a very fine genus of *Araceæ*, but it requires considerable space for its accommodation under glass. The



XANTHORRHÆA AUSTRALIS,

Australia.

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species are, however, of hardy constitution, and will bear crowding together during winter, and in summer, after being properly hardened, they may be planted with much advantage in a sheltered corner of the garden, where their large leaves give quite a tropical appearance to the scene. Plant in rich loam and river sand. To increase these plants the suckers must be taken off, or when the plant gets old and forms a stem, it should be cut down, and the stem cut into small pieces, and placed in a warm close frame in some light soil.

X. sagittæfolia.—A fine large-growing plant, sometimes found in gardens under the name of *Arum sagittæfolia*, but by no means of recent introduction. The leaves are from one to three feet in length, sagittato-ovate, tapering to a blunt point, and of a deep green colour. Native of Tropical America.

YUCCA.

These plants are familiar enough to all who take any interest in a garden, as many of the species and varieties are grown in the open borders, and are known popularly as Adam's Needle. Their dark green leaves and majestic spikes of bloom render them very effective objects, either grouped upon the lawn, or planted in the shrubbery border. It is not with the more hardy kinds we have to do in this place, but with those which are mostly (though not in sufficient abundance) grown in the greenhouse. Some of the kinds that we recommend for the house are, as we are quite aware, by many persons considered to be hardy, but although we would certainly use them largely in the open air during summer, it is an unnecessary risk to leave these handsome plants to the vicissitudes of our winter. As ornaments for the sub-tropical garden, to plunge in and

about rock-work, or in such-like places, *Yuccas* are great acquisitions, and they are much improved in appearance by the exposure, as the sun and light intensifies the variation of their leaves, and thus increases their beauty for the embellishment of the conservatory or hall during winter. On account, also, of their robust constitution and beautiful markings, they are well adapted for window plants, and we trust the taste for them will largely increase. *Yuccas* require to have their pots well drained, and to be potted in rich loam, with a considerable addition of river or silver sand. These plants may be increased by suckers, and also from seed, when it is to be obtained.

Y. albo-spica.—An interesting and very elegant plant, with long thin narrow leaves, which are from one to one and a half feet in length, sometimes slightly twisted, dull green, clothed at the edges with a profusion of long curled white filaments. It is compact in habit, and forms an exceedingly attractive object. Native of Mexico.

Y. aloifolia.—The leaves of this species are leathery in texture, from twelve to eighteen inches in length, and about two in breadth, widest about the middle, tapering to a point, and there armed with a sharp spine, spreading horizontally, and of a dark green. It is an erect-growing plant, and when grouped with its variegated varieties, affords a rich and beautiful contrast. Native of the West Indies and South America.

Y. aloifolia variegata.—A superb plant, in habit resembling the preceding. The leaves are from eighteen inches to two feet in length, and about two inches in breadth, tapering to a point and terminated with a sharp spine, centre dark green, fading to grey, and bordered with yellowish white. It is a very handsome and ornamental variety.

Y. concava.—This is of robust habit, and very distinct. The leaves are stout, spreading, concave, from two to three feet in length, and about three inches in width, dark green, bordered with a narrow band of brown, and ending in a short stout brown spine.

Y. concava longifolia.—A distinct form of the preceding variety, differing from it in its longer and narrower leaves, and in being far less channelled; the spine at the apex is long and sharp, not short and blunt, as in the species.

Y. De Smetiana.—A very distinct and elegant species. The stem is slender; the leaves much reflexed, narrow, about twelve inches in length, and rather less than an inch in breadth, dark green, glaucous, and suffused with a rich metallic hue. This is an extremely rare species, and totally distinct from any other plant at present in cultivation.

Y. Draconis.—The stem of this species is stout at the base. The leaves are closely set, eighteen inches in length, and two inches broad, thick and fleshy, dark green, and ending in a long thin unarmed point. A fine massive ornamental species, one that will be a superb ornament to the sub-tropical garden in the summer months. Native of South America.

Y. filamentosa variegata.—This variety is of compact habit, and very ornamental in appearance. The leaves are from twelve to eighteen inches in length, and about two in width, dark green in the centre, bordered with pure white, and clothed at the edges with long white filaments. Native of North America.

Y. quadricolor.—A magnificent kind, well deserving a place in any and every collection of plants. The leaves are stout, spreading horizontally, and tapering to a point,

where they are armed with a sharp spine, from one to two feet in length, and from one to one and a half inches in breadth; the upper surface creamy yellow in the centre, tinged with crimson and orange yellow, and broadly bordered with dark shining green; the under side and stem is creamy yellow, the leaves being bordered with a narrow green margin. Native of Mexico.

Y. quadricolor Stokesii.—In this plant we have all the beauties of the preceding intensified. The colours are the same, except that the creamy yellow is in this kind exchanged for a rich dark orange yellow, and the leaves are more recurved. It is undoubtedly the finest of all the variegated *Yuccas*. Native of Mexico.

Y. recurva.—Stem stout, six inches in diameter at the base, and from six to ten feet in height. The leaves are stiff and rigid, from twelve to twenty inches in length, and rather above an inch in width, sheathing at the base, the point armed with a stout spine, and the edges sparingly clothed with long white filaments; they are dark green on both surfaces, except at the sheathing base, which is reddish brown. Native of Georgia.

Y. serrulata.—This is a compact small-growing plant, with a slender stem, and leaves from one to two feet in length, slightly more than an inch in width, finely serrated at the edges, dark full green, and armed at the apex with a stout brown spine. Native of Carolina.

Y. serrulata angustifolia.—Leaves from twelve to eighteen inches in length, and less than an inch across, finely toothed at the edges, dark green, slightly glaucous at the base, and armed at the apex with a stout brown spine. Native of Carolina.

Y. serrulata variegata.—An elegant and dwarf-growing species, resembling *Y. aloifolia variegata* in miniature.

The leaves are finely toothed at the edges, from six to twelve inches in length, and less than an inch in breadth; centre of the leaf deep green, the margins yellowish white, red at the base and slightly glaucous, the apex terminated by a stout spine. Native of Carolina.

Y. Treculeana.—This is a very handsome plant. We have not seen it sufficiently aged to produce a stem, but it bids fair to be an extremely ornamental species. The leaves are from two to three or more feet in length, and two inches in breadth; they are rich dark green on both sides, with a narrow red margin; the apex is armed with a short stout spine. Native of Texas.

ZALACCA.

This is a genus of Palms found growing in marshy swampy places in Assam, Burmah, Malacca, Sumatra, and probably in many other islands in the Indian Seas, and are all stemless. The leaves are pinnate, but destitute of the whip-like elongation of the genus *Calamus*, to which they are nearly related. The flower spikes are freely produced, and are furnished with an indefinite number of spathes; the sexes are produced separately, and upon distinct plants. Fruits scaly, resembling those of *Calamus*, and from one to three-seeded. The species comprising this genus are dwarf spreading plants, and very handsome. They should be potted in principally vegetable mould, the pots well drained, and if possible plunged for some depth in water. When the plants produce suckers or lateral growths from the base, these should be taken off and potted, but the usual mode of multiplication is by seeds.

Z. edulis.—An elegant somewhat *Calamus*-like plant, with

spreading pinnate leaves; the petioles are broadly sheathing at the base, dark ferrugineous brown, and armed with black spines, an inch in length, produced two and three together at the base, but towards the apex singly, and there distant. The leaves are one or two feet in length; pinnæ six to ten inches long, dark green, the apex broadly bilobed. It is sometimes found in collections under the name of *Z. Blumeana*. Native of the East Indies.

Z. Wagneri.—The petioles of this beautiful species are profusely armed with long white spines; leaves two to four feet long, irregularly pinnate; pinnæ six to twelve inches in length, two in breadth, and of a bright dark green colour. Native of the East Indies.

ZAMIA.

A noble genus of Cycadeaceous plants, remarkable for their stout fleshy stems, and their hard enduring leaves. They are mainly related to *Encephalartos*, to which genus the reader is referred for instructions on their cultivation.

Z. calocoma.—This is an exceedingly rare species. The stem is slender, and slightly woolly in the crown; leaves pinnate, naked portion clothed with a thin coating of white woolly scales; pinnæ six to ten inches or more long, tapering to a point and set very close together, dark green on the upper side, slightly paler below. It is an elegant plant. Native of Tropical America.

Z. debilis.—A pretty dwarf spreading species. The leaves are pinnate, from one to two feet long, the petiole being naked about half its length; pinnæ from three to six inches in length, and one in breadth, with a somewhat serrated apex, and dark green on both surfaces. Native of the West Indies.

Z. eriolepis.—Stem slender; leaves pinnate, bright green; the petioles are slightly spiny, and the pinnæ have a few small spines at their apex. A somewhat rare but very desirable species in a collection of *Cycadeaceæ*.

Z. Fischeri.—This species is a dwarf-growing kind, producing a stem about nine inches in circumference. The leaves are pinnate, from one to two feet in length, smooth; pinnæ three inches in length, less than one inch in breadth, tapering to a point, serrate at the edges, thin in texture, and of a dark green colour. Native of Tropical America.

Z. integrifolia.—Stem slender; leaves pinnate, one to three feet in length; pinnæ oblong, serrate at the edges, about six inches long and one broad, dark shining green above, paler below. This is a very distinct and pretty species. Native of the West Indies.

Z. niveo-lanuginosa.—We are unable to say to what height this species attains. The leaves are from one to three feet in height, pinnate; pinnæ linear, three to four inches in length, dull green in colour, the rachis covered with a dense tomentum, which, however, falls off with age, and is quite lost as it forms a stem. It is a very handsome plant, and, like all the members of this order, does not speedily grow too large for even a small house. Native of Cape of Good Hope.

Z. Sieboldii.—A very distinct species with a smooth bare stem, something like *Stangeria paradoxa*, but taller. The petioles are slender, furnished with fine teeth-like spines; leaves pinnate, dark green; pinnæ also armed with short spines at the apex. It is an extremely rare plant in cultivation.

Z. Skinneri.—A very distinct and handsome species. The stem is from one to three feet in height, and six inches in circumference. The leaves are from one to three feet

in length, pinnate, and somewhat spreading; petioles black green, and, as well as the rachis, armed with short sharp spines; pinnæ distant, somewhat elliptical-obovate, leathery in texture, plaited, nine to twelve inches in length, four in breadth, and bright shining green, and slightly spiny towards the apex. Native of the Isthmus of Panama, about Veraguas.



ADDENDA.

The following plants, having been omitted in their proper place through accident, we have deemed it better to insert them as addenda, than to wholly shut them out from these pages :—

ALOCASIA.

A. macrorrhiza variegata.—A large-growing plant, which with age becomes caulescent. The leaves are large, somewhat cordate, with slightly waved margins, bright green, blotched and marbled with white, in some instances nearly quite white; the footstalks of the leaves are also broadly streaked with the same pure white. It is one of the most striking and effective ornamental-leaved plants yet introduced to our stoves. It is said to have originated in a garden in the Island of Ceylon.

DRACÆNA.

D. Guilfoylei (*Cordyline*).—This is a superb plant of recent introduction to our gardens, totally distinct from any other species. The leaves are from twelve to eighteen inches in length, and some two inches in width, tapering to a point, ground colour dark green, striped throughout with white, which becomes suffused with rose, especially towards the margins. It is not only a beautiful ornament in the stove, but is a splendid object for the decoration of apartments and the dinner table. Native of the South Sea Islands.

D. Chelsoni.—A fine bold-growing species. The leaves are large, and a very deep glossy black green in colour, beautifully suffused with rich crimson, producing a splendid effect, and constituting this one of the most handsome of its tribe. Native of the South Sea Islands.

NIDULARIUM.

A genus of short-stemmed plants, belonging to the order *Bromeliaceae*, and nearly allied to *Billbergia*. The name is derived from "nidus," a nest, from the circumstance of their flowers being produced low down in the centre of the plant, surrounded by their coloured leafy bracts, which are the chief attractions of the genus. *Nidulariums* are handsome spreading vase-like plants, remarkably easy to grow into good specimens; and as the rich colouring of the inner leaves retain their brilliancy for several months, they become valuable for decorative purposes, more especially when this occurs, as it frequently does, during winter. Pot these plants in a mixture of peat and leaf mould, in equal parts, adding a little sand. They require stove treatment to bring them to a flowering state, but when in bloom, they may be used without injury for the decoration of apartments. Increase is effected by suckers and seeds.

N. Innocentii.—A compact-growing plant, with large lanceolate leaves, the margins prettily serrated, dark green on the upper side, deep reddish purple beneath. The flowers are produced in the nest-like crown, and are bright orange red. Native of Brazil.

N. Laurentii.—This elegant plant has ligulate recurved leaves, which become suddenly acuminate at the apex, light green in colour, dotted with dark brown; the inner

ones are white towards the base, contrasting beautifully with the pale blue flowers. Native of South America.

N. Scheremeteffii.—The leaves of this species, like all the genus, are arranged in a rosulate manner, ligulate and spreading, dark rich green, the inner ones brilliant red. Flowers blue. A very elegant plant. Native of South America.

PANAX.

P. excelsa.—Under this name a plant has been for some time an inhabitant of our gardens, but if correctly so called we are unable to say. It is a very graceful and ornamental plant, with arching compound leaves; the divisions of the leaves are deeply lobed, and armed at the margins with soft white spiny teeth, which stand erect, and present a curious appearance; leaves dark shining green on the upper side, paler below. A splendid plant for table decoration. It requires stove heat, and should be grown in a mixture of two parts peat and one part loam, and liberally supplied with water.

PERISTROPHE.

A small genus of *Acanthads*, nearly allied to *Justicia*. The only kind introduced here is admirably adapted for a basket plant, either in the stove or greenhouse, and during summer it forms a beautiful contrast in the sub-tropical garden with such plants as *Alternantheras*, *Iresine*, &c. Succeeds in a mixture of peat, loam, and leaf mould, and is increased by cuttings.

P. angustifolia aureo variegata.—An elegant little dense spreading plant, seldom exceeding six or nine inches in height, although it extends laterally to a considerable extent. The leaves are ovate-lanceolate in shape, bright orange in the centre, margined with dark green. It is

a perfect little gem, and should be extensively cultivated. Native of the Java Mountains.

SOLANUM.

S. hybridum compactum.—Very great improvements have been effected during the last few years, through hybridisation, in the genus *Solanum*, more especially in the berry-bearing section, of which *S. capsicastrum* may be taken as the type, and which has been the parent of many very fine varieties. Amongst all the superb forms, however, which have been obtained by cross-breeding, the present stands pre-eminent. *S. hybridum compactum* is of fine dwarf and compact habit, seldom exceeding eighteen inches in height, and very close branching, thus forming a dense and handsome bush. The leaves are produced in abundance, and are from three to four inches in length, about one in breadth, oblong-lanceolate in shape, tapering towards the base, and deep rich full green. In early summer they are profusely adorned with small white flowers, which are succeeded in autumn by large round bright red berries, borne in clusters of from five to seven; in this state they are admirably adapted for the decoration of apartments or for the dinner table, in addition to the beautiful effect they produce in the greenhouse or conservatory. They are also very ornamental in the open borders; being very hardy, they are not affected by early frosts, and thus, especially in mild autumns, the beauty of the borders or beds may be considerably enhanced by the culture of this variety.

STADMANNA.

S. Jonghei.—This plant is a beautiful object for dinner-table decoration, and when it becomes too large for that purpose, it becomes a noble ornament in the stove; it

belongs to the order *Sapindaceæ*. The leaves are pinnate ; pinnæ oblong-acuminate, serrate at the edges, dark shining green on the upper side, much paler below. It should be grown in the stove, and potted in peat and loam, with a little sand added. Native of Australia.

TUPIDANTHUS.

T. calyptratus.—This is a noble sub-tropical plant, standing in the open air during summer without the slightest injury, and in winter forming a beautiful ornament in the conservatory or greenhouse. The leaves are large, digitate, and dark shining green. It should be potted in a mixture of two parts loam and one part peat, with the addition of a little sand, and is increased by cuttings and seeds. Native of Bengal.

YUCCA.

Y. canaliculata.—This is a fine bold plant of erect growth. The leaves are from twelve to twenty-four inches in length, narrow, channelled, lanceolate in shape, furnished at the edges with a few distant white filaments, and armed at the apex with a stout and sharp brown spine, dark green on both sides. It forms a striking ornament in the conservatory. Native of Mexico.



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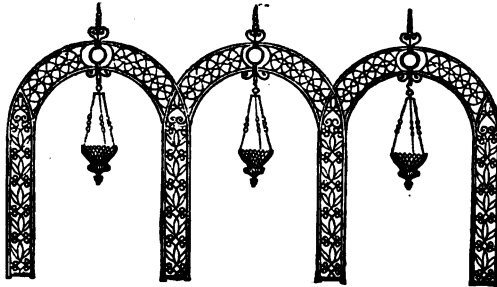
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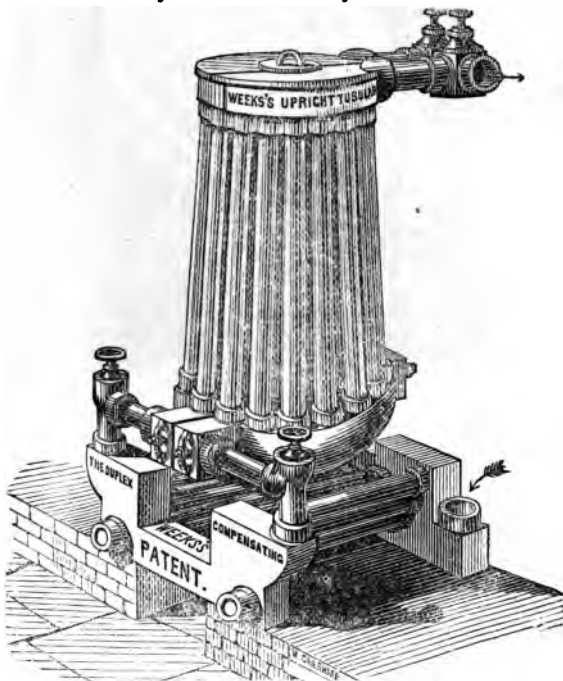


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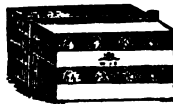
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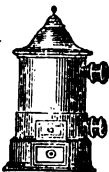
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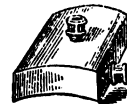
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